Kurdistan Regional Government / Iraq
Ministry of Higher Education and Scientific Research
Salahaddin University / Erbil

CONTEMPORARY ART MUSEUM

A THESIS

SUBMITTED TO THE ARCHITECTURAL ENGINEERING DEPARTMENT
OF COLLEGE OF ENGINEERING
SALAHADDIN UNIVERSITY – ERBIL
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF
BACHELOR IN ARCHITECTURE

By

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SUPERVISED BY

M.Sc. ANSAM SALEH AL - HADIDI

2019

Dedicated to …

- My dear **Parents** with love and gratitude
- My dear Sisters **(Daria)** and **(Chia)**
- My dear supervisor **(M.Sc. Ansam Saleh)**
- My dear **Teachers**

- **Any Others** who helped and inspired me in my works and studies...

Certification

I certify that this Thesis was prepared under my supervision at Salahaddin University / College of Engineering / Architecture Department , as a Partial Requirement for the Degree of Bachelor in Architecture.

Signature

Supervisor: M.Sc. Ansam Saleh Al – Hadidi
Date:

Acknowledgements

I thank Kurdistan Regional Government, Ministry of Higher Education and Scientific Research, Salahaddin University, the Deanery of College of Engineering, and Architecture Department.

I would like to express my gratitude to my supervisor Dear M.Sc. Ansam Saleh Al – Hadidi, who has helped me during my work and my ultimate thanks for her encouragement, support and guidance.

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Finally, I want to thank all those who helped me in one way or another during the writing of the thesis.

Abstract

This Thesis is entitled (Contemporary Art Museum) , it is an attempt to discuss the concept of designing an Art Museum.
The current study comprises Five Chapters in the following order:

Chapter One is an introduction to the study, and it specifies the title, thesis statement and definitions, project goals as well as all procedures of this thesis.

Chapter Two is an introduction to the Site that has been proposed for the project, with discussing needs of a site and link between people and building through analyzing certain criteria.

Chapter Three is the Analysis of some similar projects with discussing important features of them as (Concept, Structure, Material) and studying their (Plans, Sections, Elevations) to get knowledge about as well as discussing their advantages and disadvantages.

Chapter Four is the discussion of the projects main components and functions as well as the functional relationships of the components in addition to standards.

Chapter Five is the determination of the projects functions with their areas and number of users based on studied similar examples and standards.

Book Background

Concept

- **Why using Colors ?**

Since my Project is (Contemporary Art Museum), it is related to Art. Most Artworks (Specially Contemporary Art) are colorful and used more than one color, I chose these Colors shown on the right.

- **Why Five Colors ?**

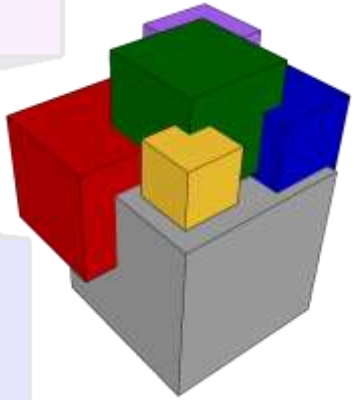
My Thesis Book consists of Five Chapters , So number of Selected Colors is same as number of Chapters

- **Why Cubes ?**

I wanted to create an Artwork Like Symbol to use in all Pages. So I used Idea of Cube Shape and abstract it to create the Art Symbol.

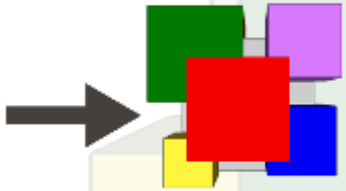
- **Why All Cubes Stick to One Grey Cube ?**

Every Idea and Project Starts with a Base , This Grey Cube Became the Base for the Whole Piece.
Since Grey is a Neutral Color , It suits All other used Colors.

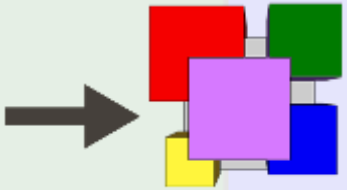


In each Chapter , the Chapter Color will be located in the Center of the Art Symbol and becoming the Chapters' Dominant Color.

Chapter One

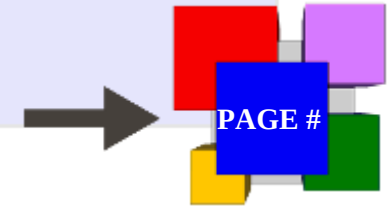


Chapter Two



Note: The Central Cube in All Chapters holds the Page Number as well.

Page Number



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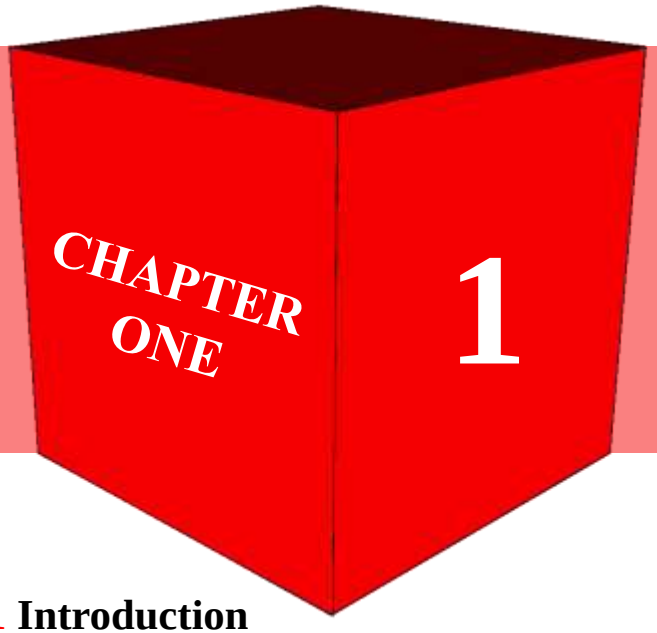
CONTEMPORARY ART MUSEUM



INTRODUCTION

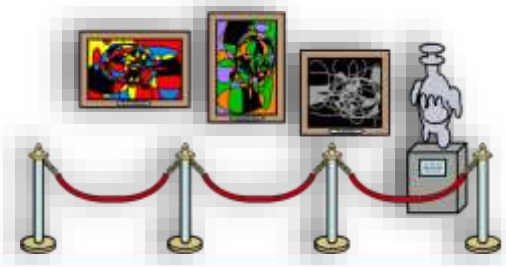
1.1 Introduction

This Chapter provides an introduction with definitions for the project, discusses its main goals and benefits.
Museum Building keeps and exhibits the most valuable and important items and make these items available for public viewing that may be permanent or temporary, according to materials categories.
In general, Art Museum is a building that holds the community treasures of Art pieces which makes important connection with people through programs and technology inside the building that makes the collections accessible.

(Figure 1.1) Rose Art Museum - US

(Figure 1.2) Michener Art Museum - United States

Architecture can explain in general a term of describing buildings , or the Art of science of designing a building. Buildings such as museums would present a huge relationship that appears clearly in a maximum expression, through containing and the content, as well museum would be the Artistic space which displays and exhibits all different levels of Arts and items, expressing Artists needs through creating different typology spaces for each item.



Types of Museum

Contemporary Art Museum: this type is chosen for this project because of the presence of many Valuable Artworks in Kurdistan and the need to have a place to keep all the Art Collection items and make them accessible for the public.

(Figure 1.3) Denver Art Museum - US

(Figure 1.4) Museum of Modern Art - Kazakhstan

(Figure 1.5) General Museum (Medical History & Innovation Museum) - Boston - England

(Figure 1.6) Natural History Museum - Los Angles

(Figure 1.7) Science and technology Museum - Beijing

(Figure 1.8) History Museum - Austria

1.2 Thesis Statement

Keeping and protecting valuable artifacts for the society, as well as designing a project to protect the cultural Artworks, to be a place for studying and researching and view the items kept to the public.

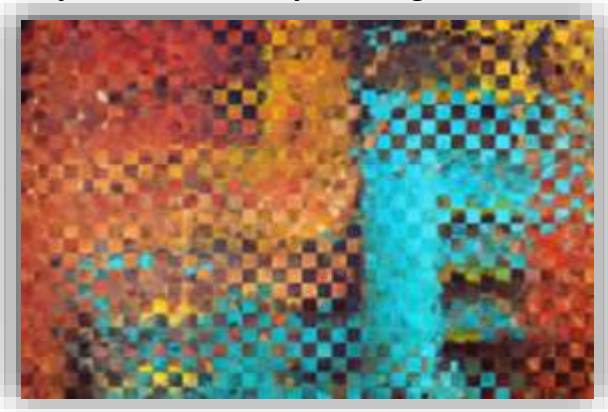
1.3 Definitions

Museum is an institution at the service of society and its development, open to public, which acquires, conserves, communicates and exhibits the tangible and intangible collections of cultural Artifacts, as well as to express and be a wide range for researchers.

Contemporary Art: is the Art of today, produced in the second half of the 20th Century in the world with cultural diversity and advanced technology.

Contemporary Art is a combination of methods, concepts, materials and subjects which distinguished from other Arts by the lack of uniform principle since Too much unity creates monotony in Design as well as In Art Works.

(Figure 1.9) Funky contemporary piece of art. Artist: Hester Coetzee



(Figure 1.10) Abstract Modern Art - Pieces 1 - Sharon Cummings

(Figure 1.11) Modern Art Painting

1.4 Historical Background

Early museums began as the private collections of wealthy individuals, families or institutions of art and rare or curious natural objects and artifacts. These were often displayed in so-called wonder rooms or cabinets of curiosities.

(Figure 1.12) Shanider Gallery - Erbil

(Figure 1.13) Shanider Gallery - Erbil

One of the oldest museums known is (Ennigaldi-Nanna)'s museum, built by Princess (Ennigaldi) at the end of the Neo-Babylonian Empire. The site dates from c. 530 BCE, and contained artifacts from earlier Mesopotamian civilizations.

Some of the oldest public museums in the world opened in Italy during the Renaissance, but the majority of them opened during the 18th century.

(Figure 1.14) Ennigaldi-Nanna's museum, Ur City

(Figure 1.15) Capitoline Museum of medieval and Renaissance art - Rome, Italy

History of Art

The oldest documented forms of art are visual arts, which include creation of images or objects in fields including today painting, sculpture, printmaking, photography, and other visual media. Sculptures, cave paintings, rock paintings and petroglyphs from the Upper Paleolithic dating to roughly 40,000 years ago.

(Figure 1.16) MAN in MOTION Sculpture Created and Signed with a COA by Corey Ellis

(Figure 1.17) Art Factory Ganesha Canvas Painting

1.5 Project Goals

Cultural
- To introduce the contemporary Art to our culture.
- To develop and enrich the city with contemporary Culture and Architecture.

Educational
- To increase Art Knowledge.
- To be a main base for students, researchers and specialists.

Social
- To create a center for Artists to discuss works and to exchange information.
- To communicate and share the ideas and emotions of Artists and viewers with Art.

Sustainability
- To introduce a building with a new way of Design for fulfilling sustainability standards.

Economy
- To be one of the economical income in our Region.

Architecturally
- To be a focal point for tourists.

Saving
- To protect local Art works.

1.6 Reasons for selecting the Project

In Kurdistan, Architecture and Buildings are continuously developing to fulfil the needs of the society. Such project is a social need and necessary to be built for protecting and introducing the cultural Artworks within introducing stronger social interactions and Knowledge.

- Lack of such project in the city
- Artists do not have a space to expose their Work and Art
- Lack of such places which work as an educational base for students and researchers

1.7 Beneficiaries

- All people of the community
- Artists and talented people
- Kurdistan Regional Government (KRG)
- Ministry of Culture
- Tourists and visitors
- Researchers and specialists
- Almost every part of the community.

NEXT…

SITE SELECTION

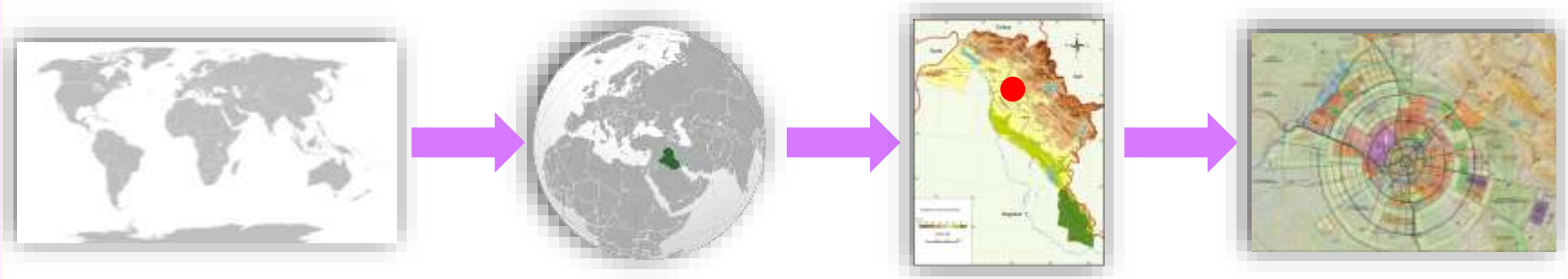
2.1 Introduction

In this Chapter, One Site has been selected for the Project. The Site is proposed for cultural Project according to proposed Land use (2030) Plan by Ministry of Municipality.
This Chapter discusses the needs of a Site and the link between People and Building with the surrounding through Analyzing certain Site Criteria. The Site must respect the Surrounding, Urban Context to harmonize with the Surrounding Environment as well as the social community.

(Figure 2.1) Erbil Satellite photo

2.2 Location

Erbil City is the capital of government of Kurdistan Region and the most Popular city in the Kurdish inhabited areas. It is located approximately 350 Km North of neighboring Baghdad / Iraq. It has a Population of Approximately 2,500,000.



The World | Iraq | Kurdistan | Erbil City

(Figure 2.2) Erbil City Location on Map

Kurdistan
Capital: Erbil
Area : 14,872 km^2

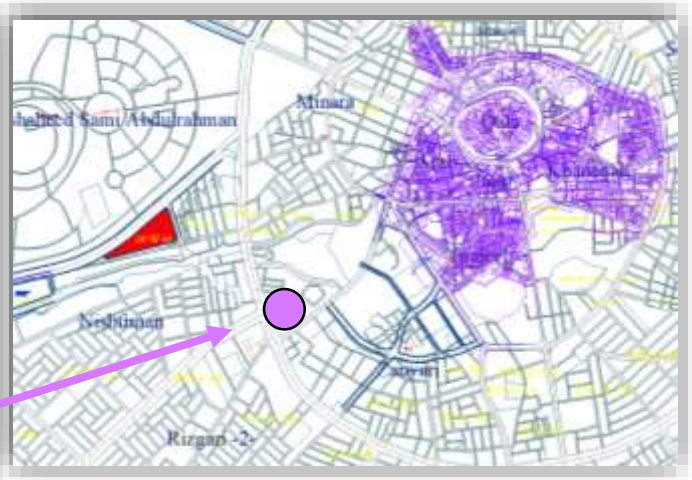
(Figure 2.3) Erbil City

(Figure 2.4) Erbil City

(Figure 2.5) Erbil City Photo: Archive of K24

Location of Proposed Site on Erbil Master Plan

(Figure 2.6) Erbil Master Plan



(Figure 2.7) Location of Site on Plan

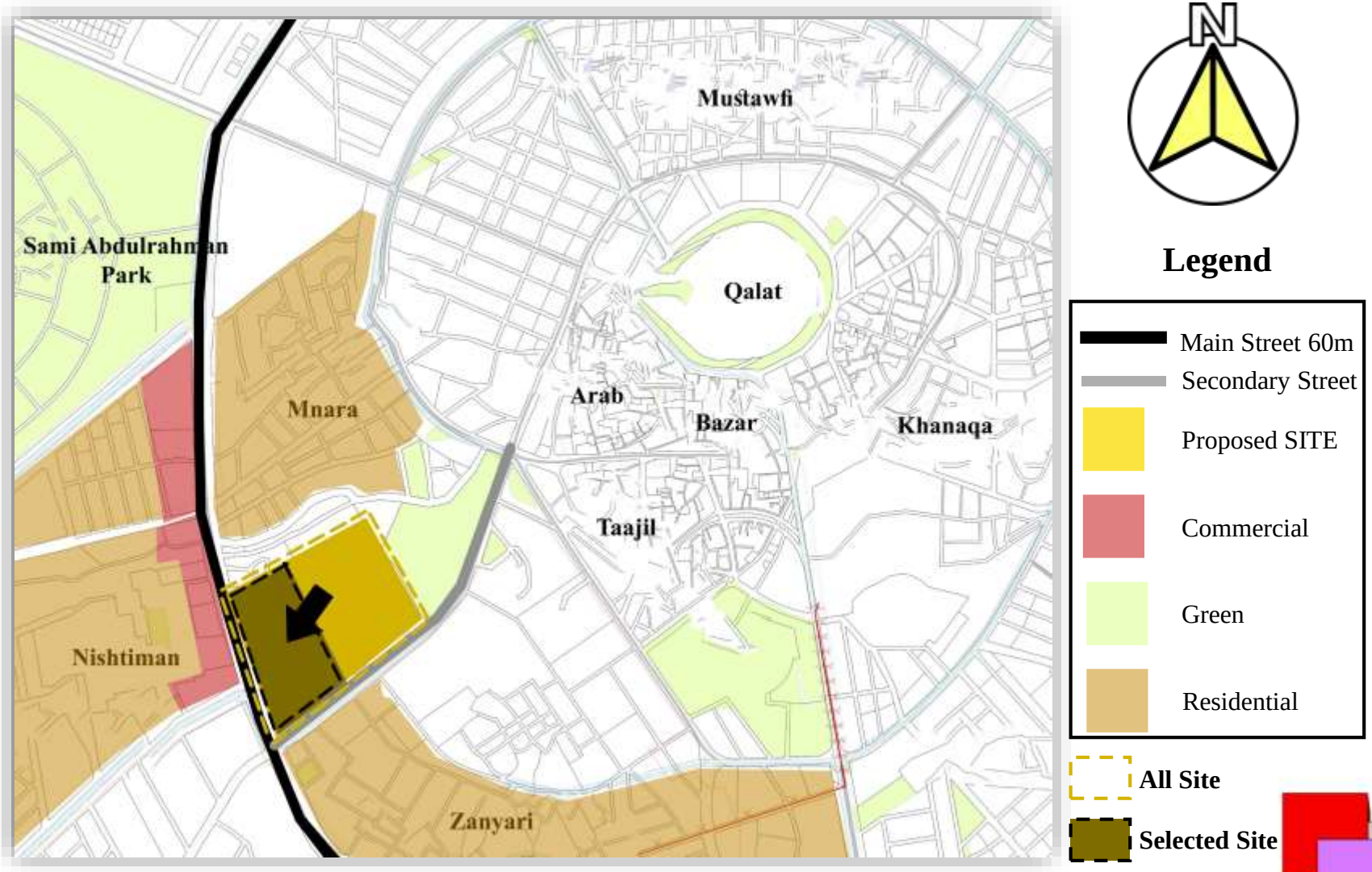
Proposed Site

Location: On 60 m Street
Total Area: 50,000 sqm

Land use Map (Sector 2) – Site and its Surrounding

(Figure 2.8) Land use map – Sector 2

Site surroundings Land use and Axes



(Figure 2.9) Site Surroundings Land Use and Axes

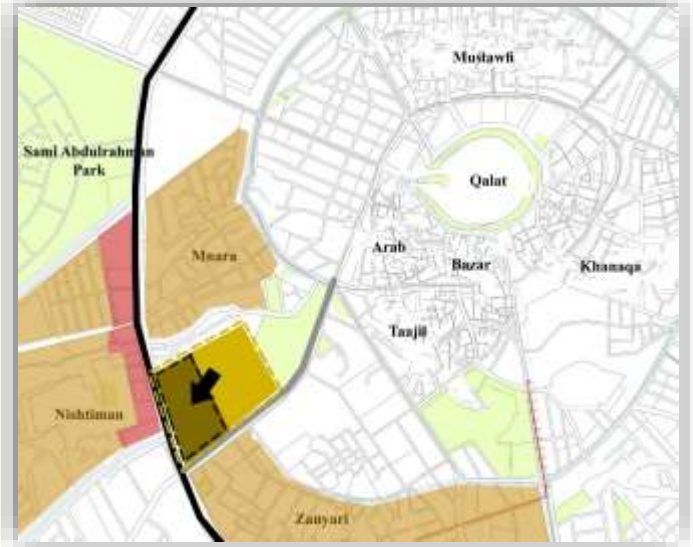
2.3 Criteria for Selecting Site

1- Accessibility:
Location of Site must be accessible with safe paths and ease of movement inside and outside of project.

2- Visibility:
The Site should be visible to people from outside which effects on the Project Appearance.

3- Land use:
The Project should not be located inside Residential Areas and not surrounded by high-rise Buildings

4- Urban Context:
The Context of the Sector (according to Plots)



(Figure 2.10) Land Use

(Figure 2.11) Urban Context

2.4 Analyzing Selected Site

1- Location

(Figure 2.12) Site Location

Shape of Site

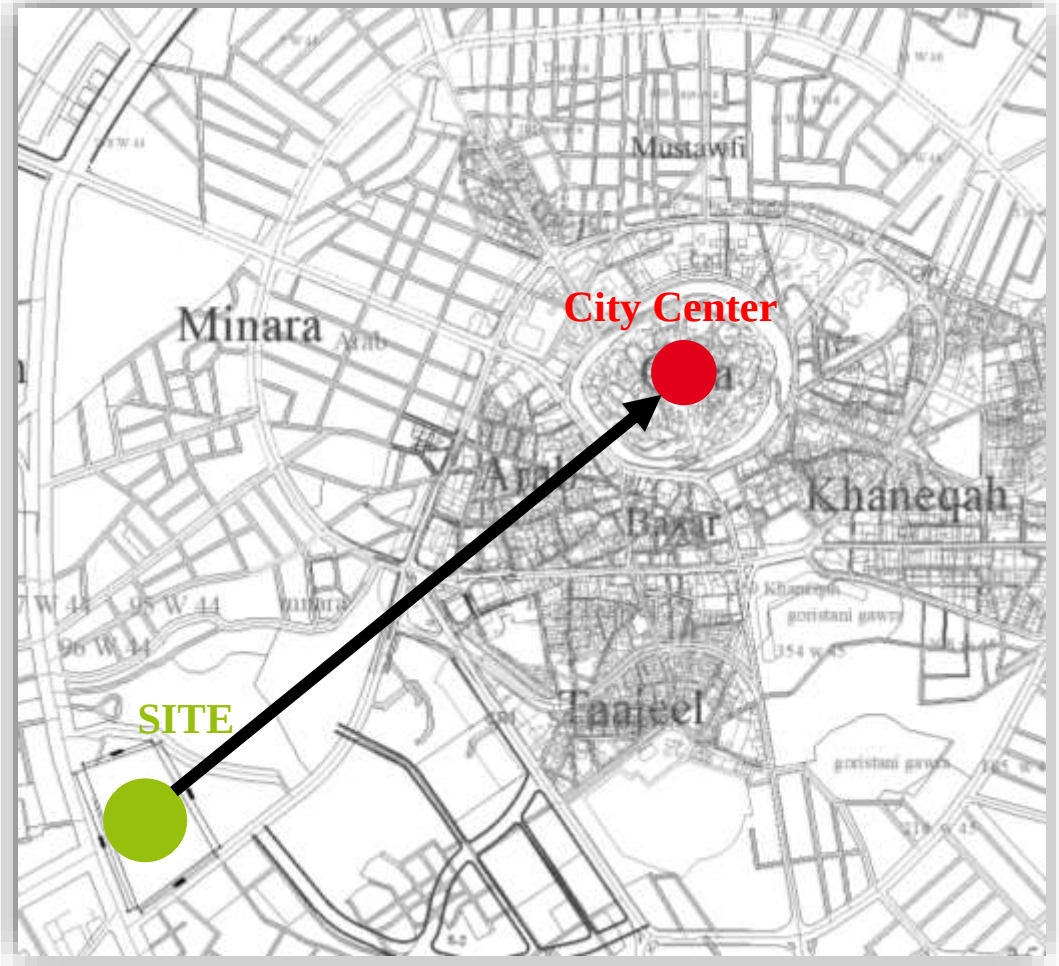
- Shape of Site is Regular
- It is almost Rectangular shape
- The Dimensions are:
  160m , 264m , 206m , 323m

Area of Site

50,000 sqm

Location of Site

The Site is located on (60m) Main Street, at the side of (Halabja) Street which is secondary Street and another secondary Street (Mnara) Street leads to Mnara Quarter



(Figure 2.13) Site Distance from City Center

Distance from City Center

The Site is **1.57 Km** far from the City Center

Surrounding Street Width

Legend

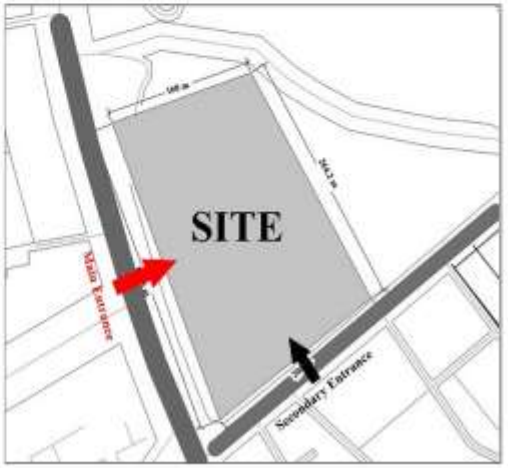
Main and Secondary Street Width

60m (Main Street)

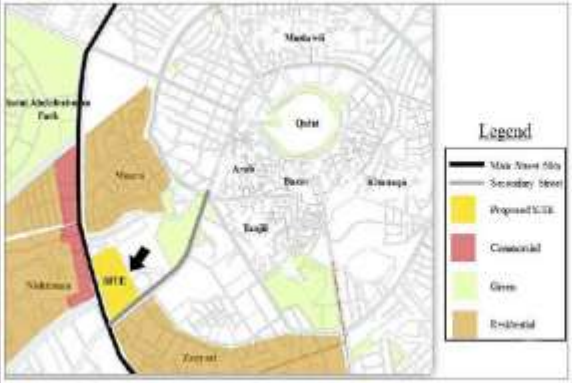
30m (Secondary Street)

(Figure 2.14) Site Surrounding Street

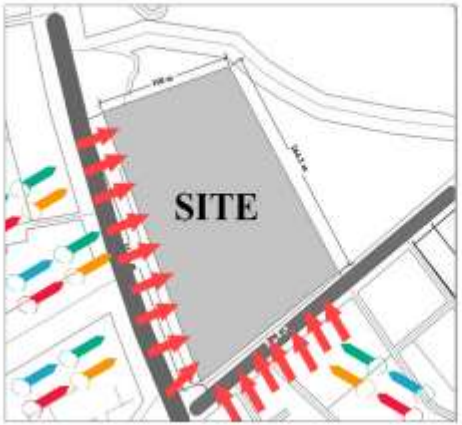
(Table 2.1) Accessibility

Factor	Diagram	+	-
Street Main Street Secondary Street		Site is Located on Main Street and Sided by a Secondary Street which makes the Project Accessible. Main Street: 60m Width Secondary Street 30m Width	No negative Point
Entry Points		The Site has two Sides of Entry , one from Main Street and other from Secondary Street. This makes Entry to the Project easier and give more Access to the Project	No negative Point

(Table 2.2) Site Surroundings

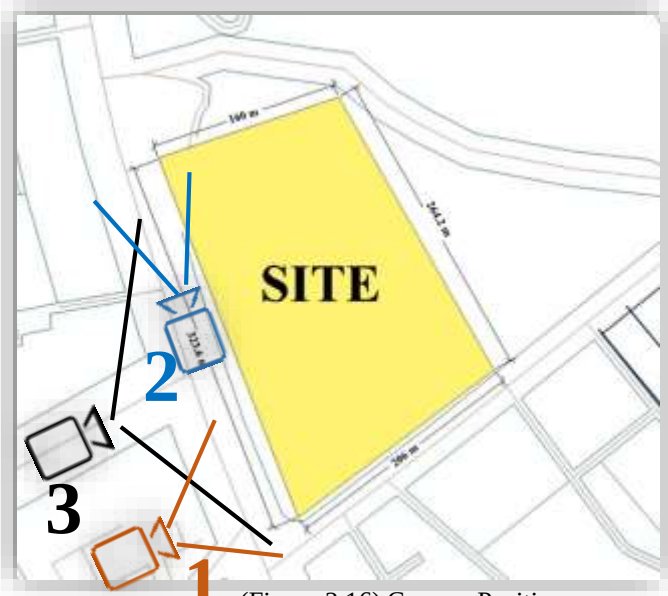
Factor	Diagram	+	-
Surrounding Height		The Site is mostly Surrounded by Residential Areas, that have maximum height of two floors that do not cover Project view opposite to Commercial Areas and Near to Park	No negative Point
Landuse		Landuse is mostly Residential surrounds the site, Opposed By Commercial and Near to Parks and Green Areas The Site is Proposed for Cultural Projects	No negative Point

(Table 2.3) Site Visibility

Factor	Diagram	+	-
Views from Out		Project can be seen Clearly from outside by people.	No negative Point
Panoramic View of Site		Project is Visible from outside and people can see Location Easily	No negative Point

Views of Site

(Figure 2.15) View 1



(Figure 2.16) Camera Positions

(Figure 2.17) View 2

(Figure 2.18) View 3 - Panoramic

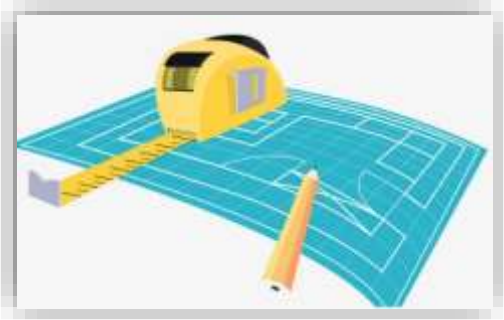
NEXT…

SIMILAR PROJECTS

3.1 Introduction

In this Chapter, Some Similar Projects are taken that have similarities with my Project in its Area and Components in order to discuss them.

- Analyzing All floor Plans and Sections of the building to know how the Architecture used in these Projects solved the relationships between all parts of the Museum and to know how to Arrange the Plans of the Museum.
- Discussing the Project in Detail such as (Project Concept, Structure and Material of Elevation to get knowledge about which materials suits my project the most.
- Discussing Advantages and Disadvantages of each Project.



3.2 Example 1: MAXXI Museum of Art

Architect: Zaha Hadid
Architecture Style: Neo – Classical Style
Total Site Area: 29,000 sqm
Exterior Spaces Area: 19,640 sqm
Interior Spaces Area: 21,200 sqm
Display Spaces Area: 10,000 sqm
Services: 6,000 sqm
MAXXI ART Area: 4,077 sqm
MAXXI ARCHITECTURE Area: 1935 sqm
Building Type: Art Museum
Location: Rome, Italy
Year of Ensnarement: 1999
Year of Completion: 2009

- Circulation is the Main Goal of the Project. It has No Wall Divisions and Interruptions which makes the project a suitable place for any moving and temporary Exhibition.

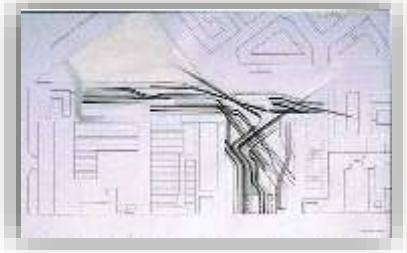
(Figure 3.1) 3D View of MAXXI Museum

(Figure 3.2) 3D View of MAXXI Museum

Concept

The Concept is taken from alignment of Architectural Elements with the Urban Grids surrounding the site to integrate the building with its Context. The Concept of Deconstructed Fluidity matched with the identity of a static city as Rome, and with its Classical Heritage.
The response of critics and public has been positive. Especially in this context, in the relation with the existing fabrics, the curved smooth walls dialogue with the neo-classical symmetrical facades.

(Figure 3.3)
Concept Sketch by
Zaha Hadid



(Figure 3.4) Concept Sketch

MAXXI Museum of Art

(Figure 3.5) MAXXI Museum of Art – General View

(Figure 3.6) MAXXI Museum of Art – General View

(Figure 3.7) MAXXI Museum of Art

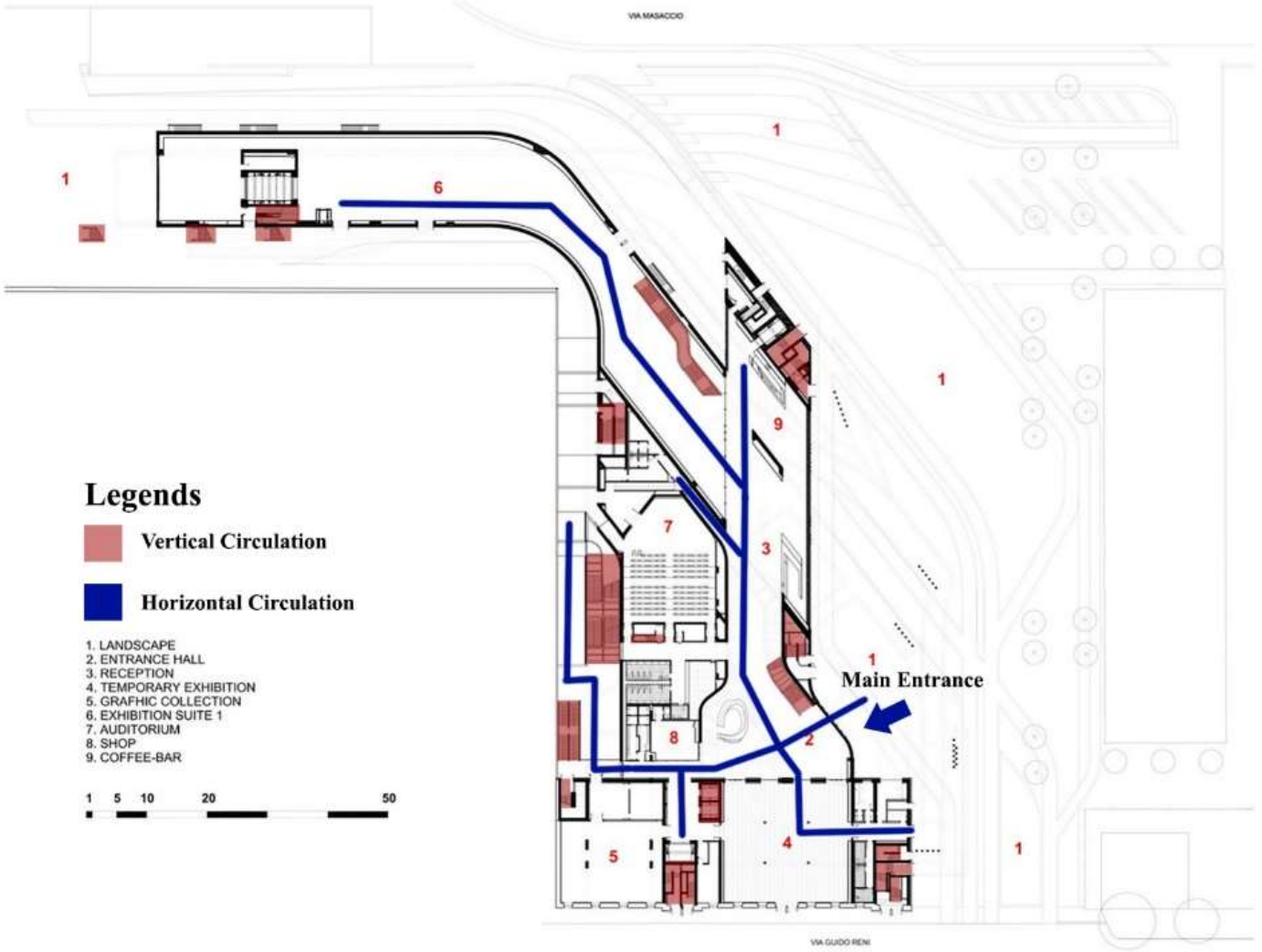
Site Plan - Zoning

(Figure 3.8) Site Plan

Ground Floor Plan - Zoning

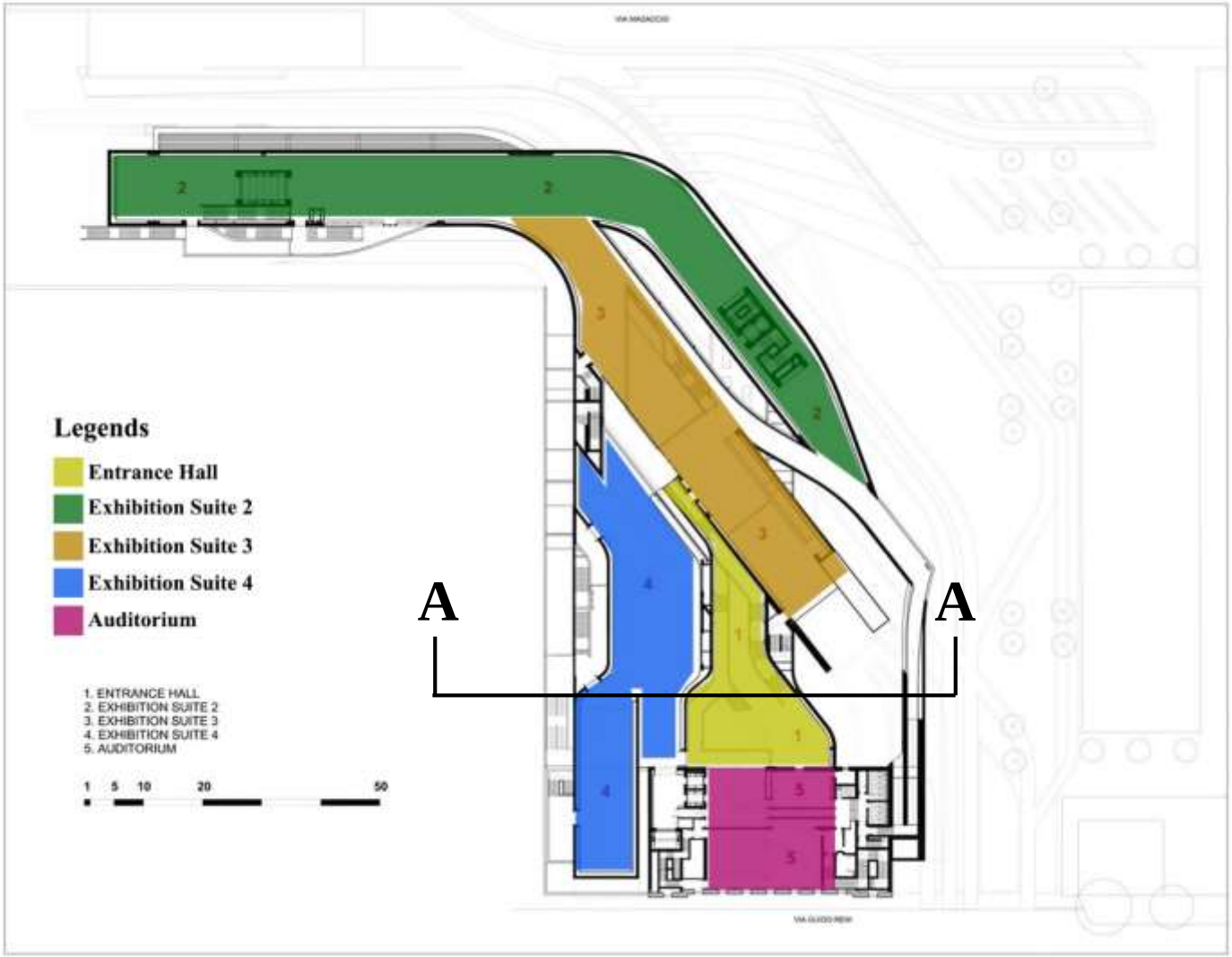
(Figure 3.9) Ground Floor Plan - Zoning

Ground Floor Plan - Circulation



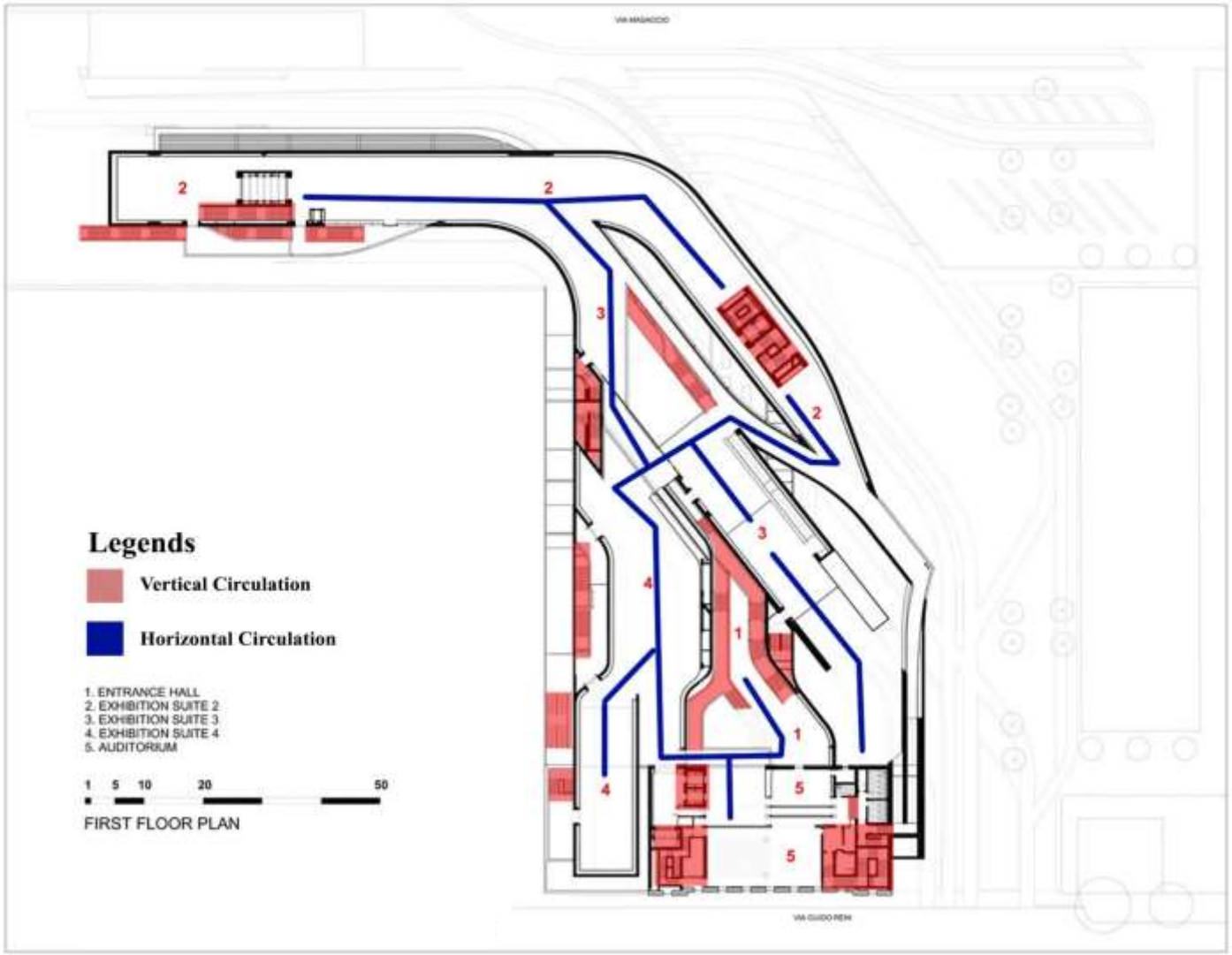
(Figure 3.10) Ground Floor Plan - Circulation

First Floor Plan - Zoning



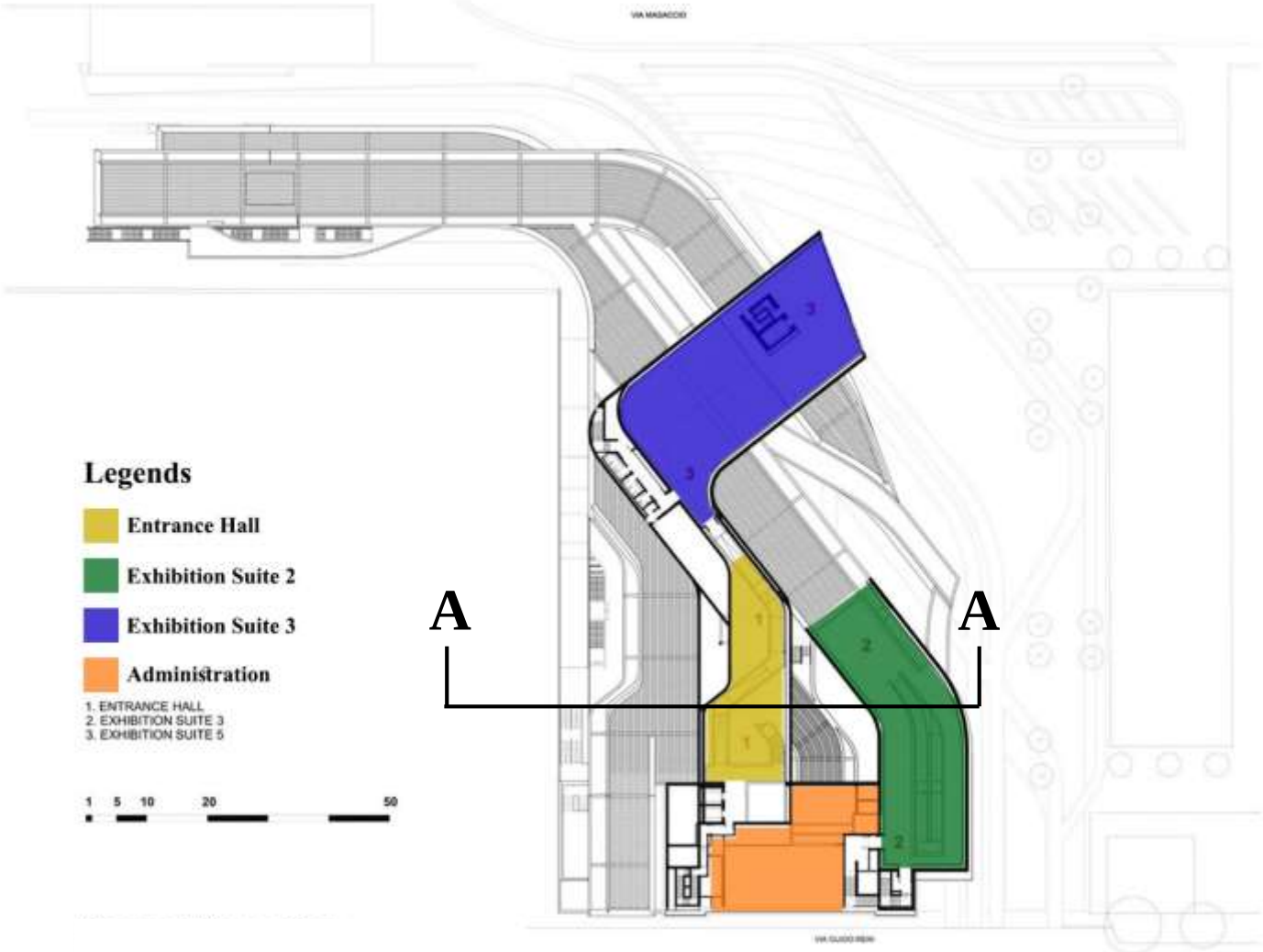
(Figure 3.11) First Floor Plan - Zoning

First Floor Plan - Circulation



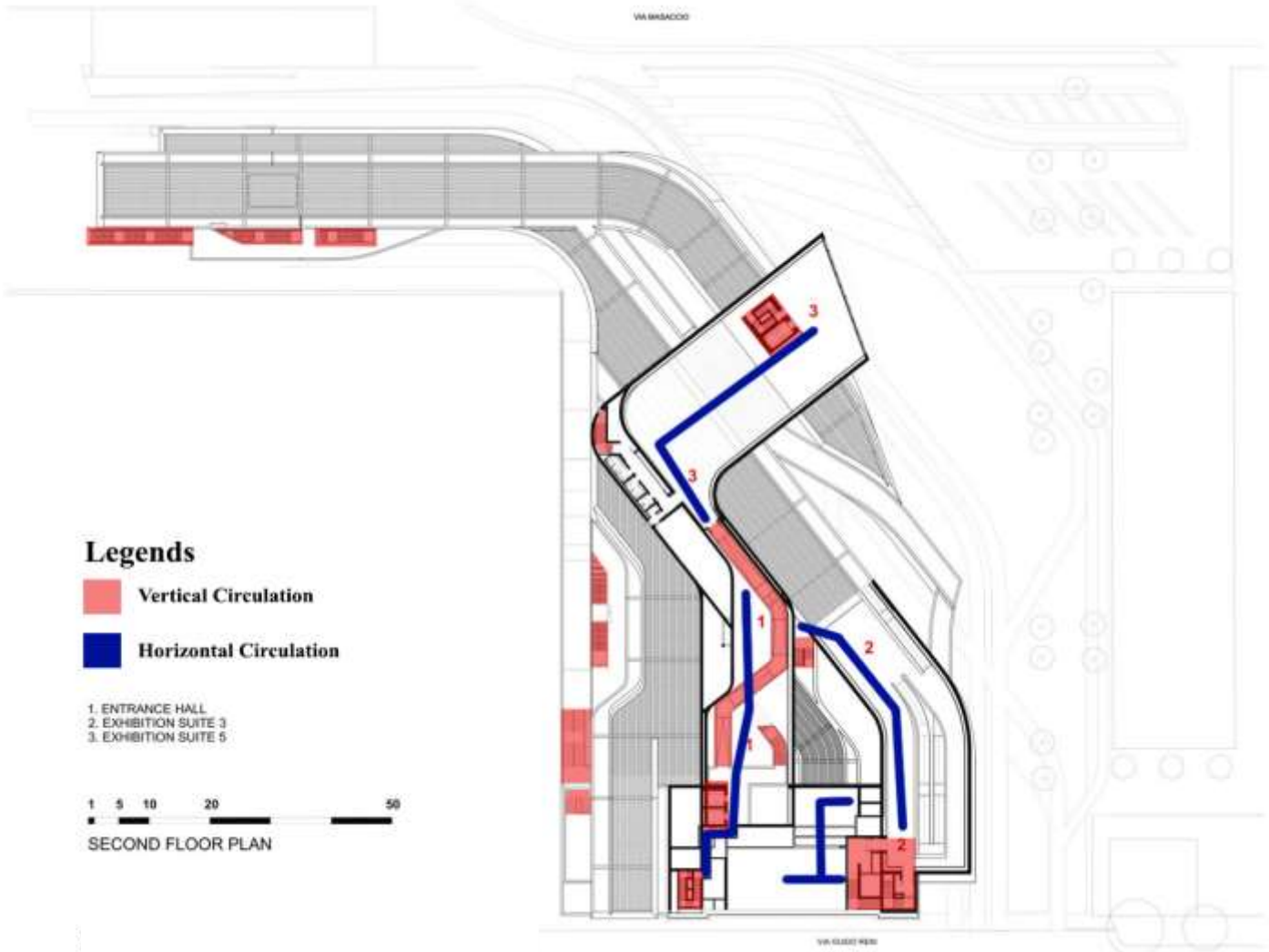
(Figure 3.12) First Floor Plan - Circulation

Second Floor Plan - Zoning



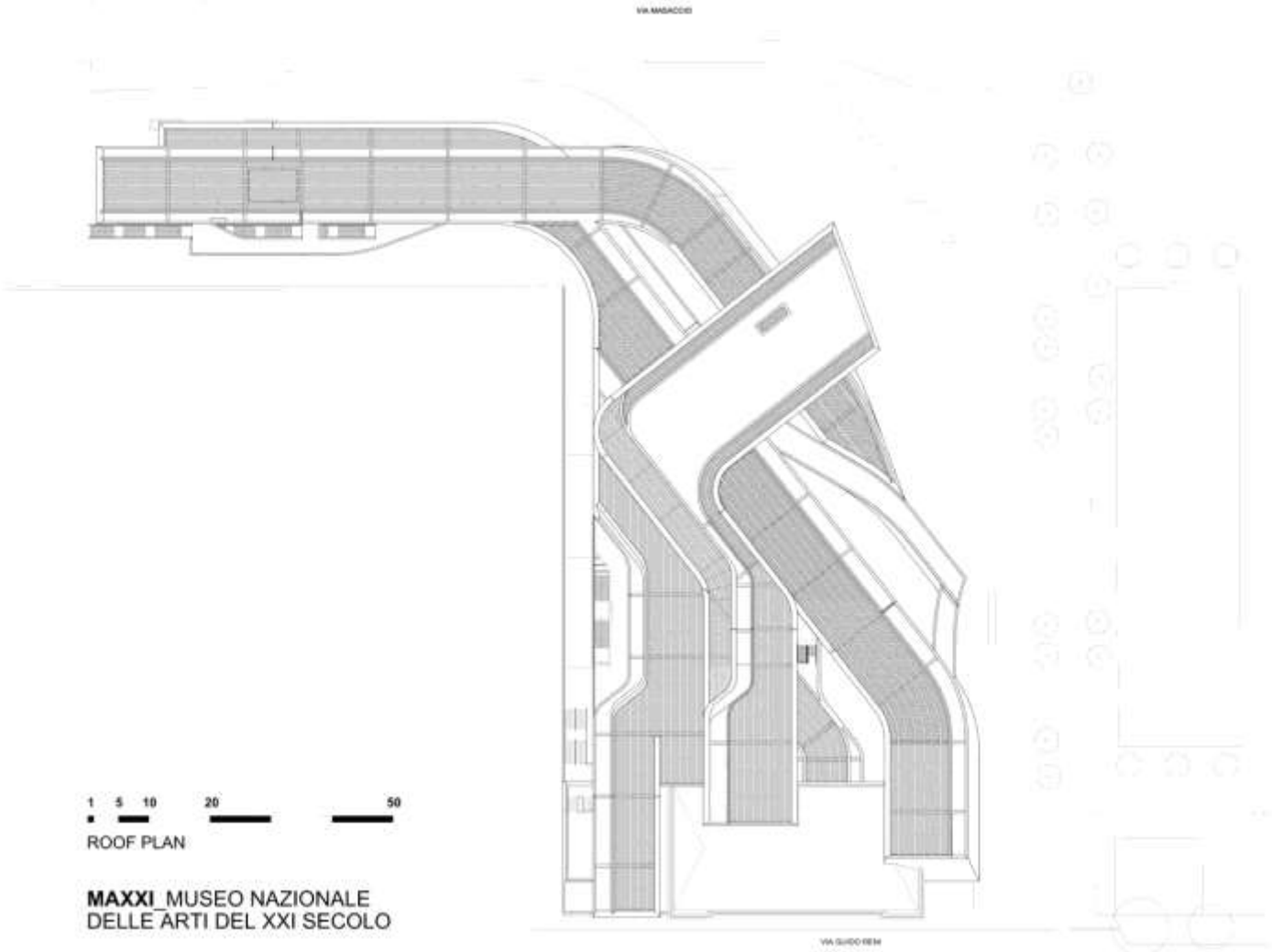
(Figure 3.13) Second Floor Plan - Zoning

Second Floor Plan - Circulation



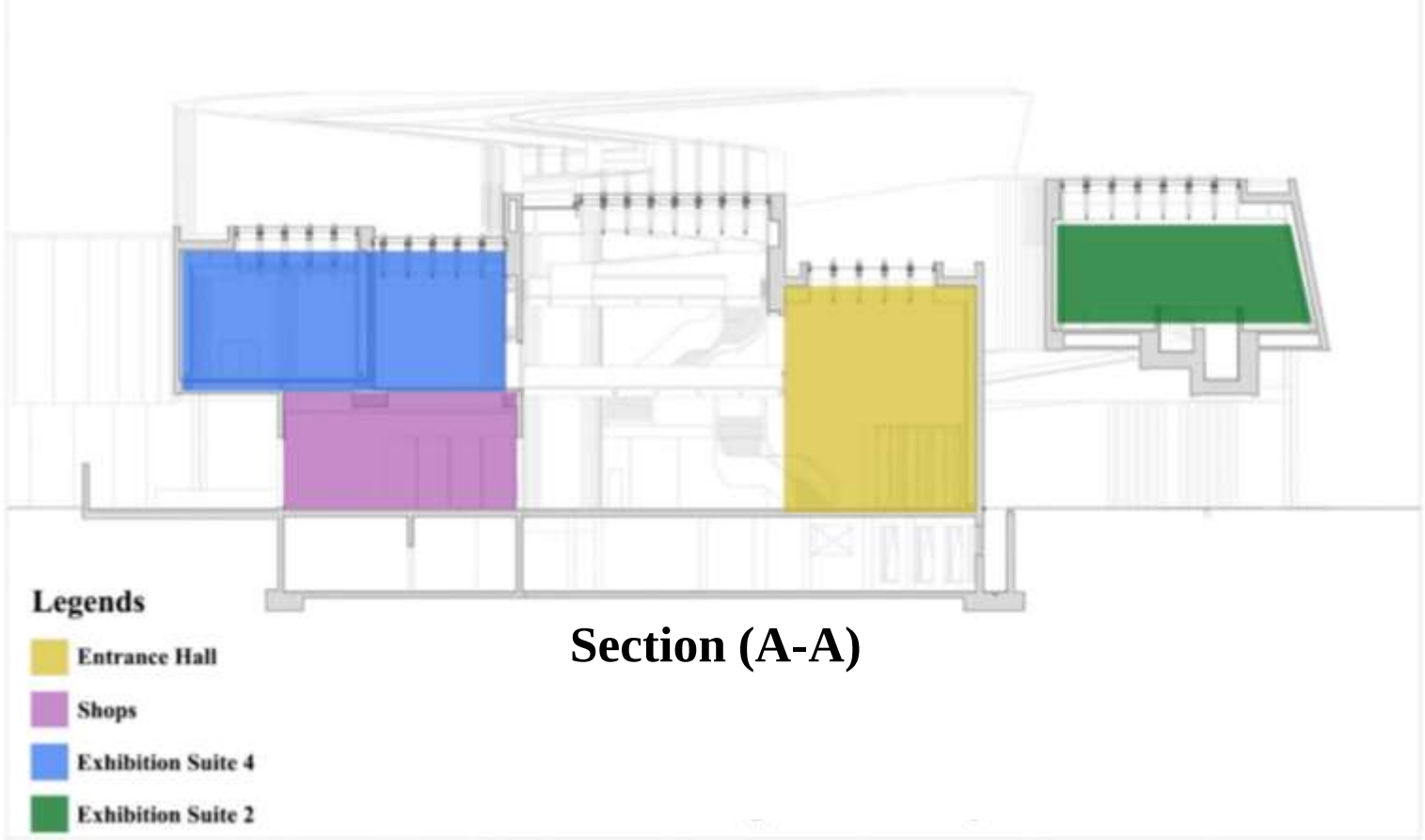
(Figure 3.14) Second Floor Plan - Circulation

Roof Plan



(Figure 3.15) Roof Plan

Cross Section Through Lobby - Zoning

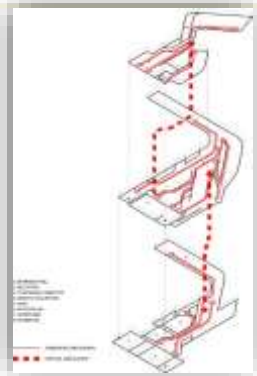


(Figure 3.16) Cross Section Through Lobby - Zoning

Circulation Analysis

Circulation in the Museum can be Experienced easily , the Fluidity of its Design Match the Context of Surrounding and Absence of Walls makes Circulation and Temporary Exhibitions Easy.

MAXXI is the first national museum of Contemporary Art in Italy. It will bring a lot of attentions, by public and media, together with economical activities, rendering this museum a central point for Rome, which is in constant look for its contemporary identity.



(Figure 3.17)
Circulation Analysis

Structural Analysis

Reinforcement Concrete, Glass and Steel Structure are used in the Project.
Materials used in the Project:

- Reinforced Concrete: Used for Walls
- Glass: Used in Roof, Floor and Windows
- Steel Structure: Used in Staircase and Columns
- Plasterboard: Connected with Concrete walls, creates technical cavity that contain Mechanical System of the Museum

(Figure 3.18) MAXXI During Construction

(Figure 3.19) MAXXI Structure Construction

(Figure 3.20) MAXXI Construction

Environmental Analysis

Fixed Shading System:

- The External Steel Ribs are oriented to the South, Active Louvers as well as internal roller blinds to cut down on radiant energy and to create lighting conditions

Carbon Dioxide Sensors:

- Minimize the quantity of incoming fresh air that needs to be heated.

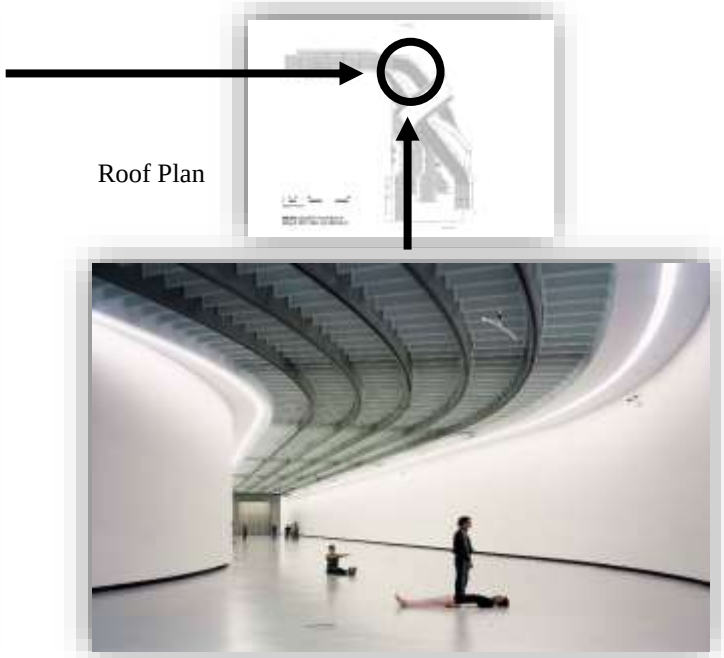
Problems of Skylight:

- Failures of Envelope, Leaking.

(Figure 3.21) Problems of Skylight

Interior Views – Roof Skylight

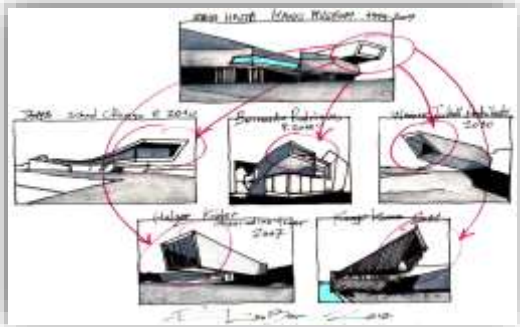
(Figure 3.22) Sky Light



(Figure 3.23) Sky Light

Elevation Analysis (Façade)

The façade of MAXXI Museum has a smooth and curved shape that makes it compatible with the Neo Classical Style used for building as well as respecting its Urban Context.



(Figure 3.24) MAXXI Sketch of Façade Analysis

Interior Views - Staircase

(Figure 3.25) Staircase

(Figure 3.26) Staircase

Components and Areas

(Table 3.1) Ground Floor Plan

Component	Area (Sqm)
Entrance Hall	775
Reception	330
Temporary Exhibition	610
Graphic Collection	525
Exhibition Suite	2221
Auditorium	565
Shops	300
Coffee Bar	220

(Table 3.2) First Floor Plan

Component	Area (Sqm)
Entrance Hall	290
Exhibition Suite	850
Exhibition Suite	503
Exhibition Suite	530
Auditorium	230

Components and Areas

(Table 3.3) Second Floor Plan

Component	Area (Sqm)
Entrance Hall	280
Exhibition Suite	475
Exhibition Suite	670
Administration	270

Advantages and Disadvantages of the Project

Advantages:

- Collecting Three Different Types of Building under one Roof (Museum, Library and Conference Hall
- Constructing a Building that bears high wind and seismic loads without relying on Interior Columns
- Appearance of Project as emergence from the topography and Respecting the Surrounding Urban Context

Disadvantages:

- Lack of some important components of Cultural Center

3.3 Example 2: DENVER Art Museum

Architects: Studio Libeskind
Location: Denver**,** United States
Interior Designers: Studio Libeskind with Davis Partnership
Architectural Style: Deconstruction
Site Area: 146000 sq. ft.
Project Year: 2006

(Figure 3.27) Denver Art Museum

(Figure 3.28) Denver Art Museum

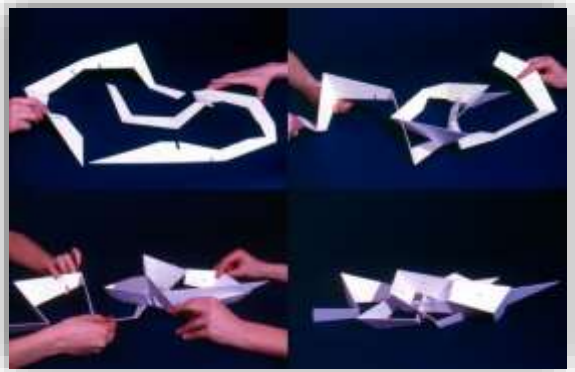
Materials

- The Main Structure of the Building is Steel and Concrete.
- Titanium and Granite are used for the Siding.

The Criteria of Choosing these Materials for the Building is to harmonize with the Other Elements of the Contents: (Monuments, Public Spaces, Infrastructure)

Concept

- The Form of the Building is inspired by the Peaks and Rock Crystal from the nearby Mountains. The Building Consists of a Series of Interlocking Rectangles producing an Aggressive form of Design, Pure and Irregular Glass and Titanium Reflecting the Types of the Nearby Mountain Rocks Available.
- The Aim of Designers is to build ideas in new way with new Structural Systems to Produce a Building that Communicate with its Context and to be known as an Art and Architecture Masterpiece from outside.



(Figure 3.29) Concept Modelling

DENVER Art Museum

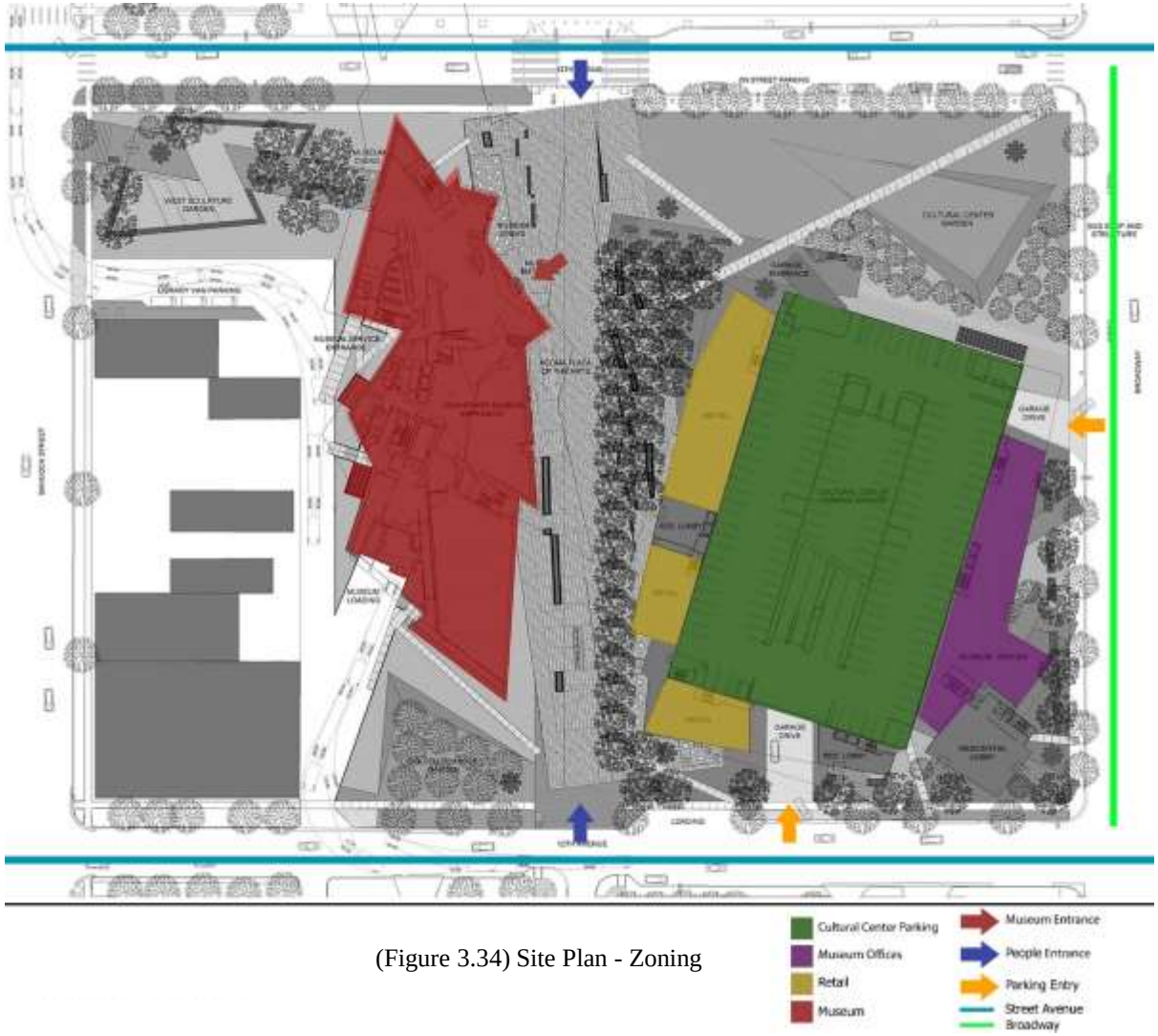
(Figure 3.30) DENVER Art Museum – General View

(Figure 3.31) DENVER Art Museum – General View

(Figure 3.32) DENVER Art Museum – General View

(Figure 3.33) DENVER Art Museum – General View

Site Plan - Zoning

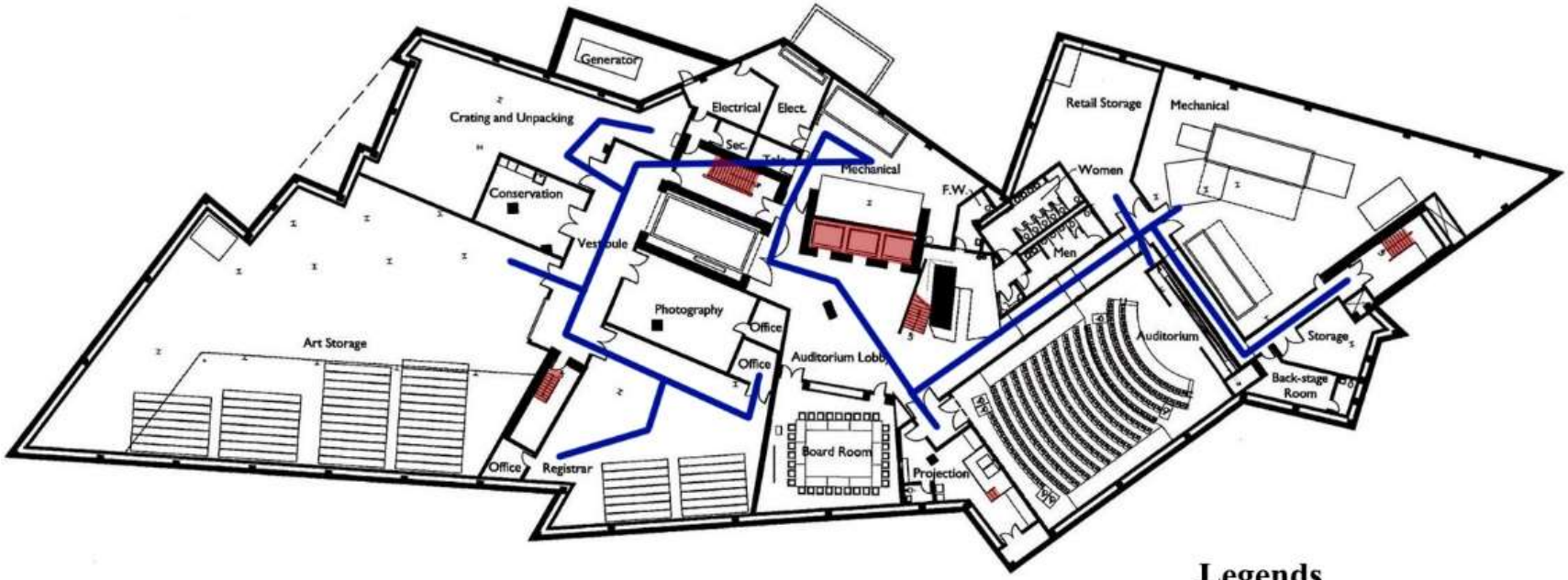


(Figure 3.34) Site Plan - Zoning

Basement Floor Plan - Zoning

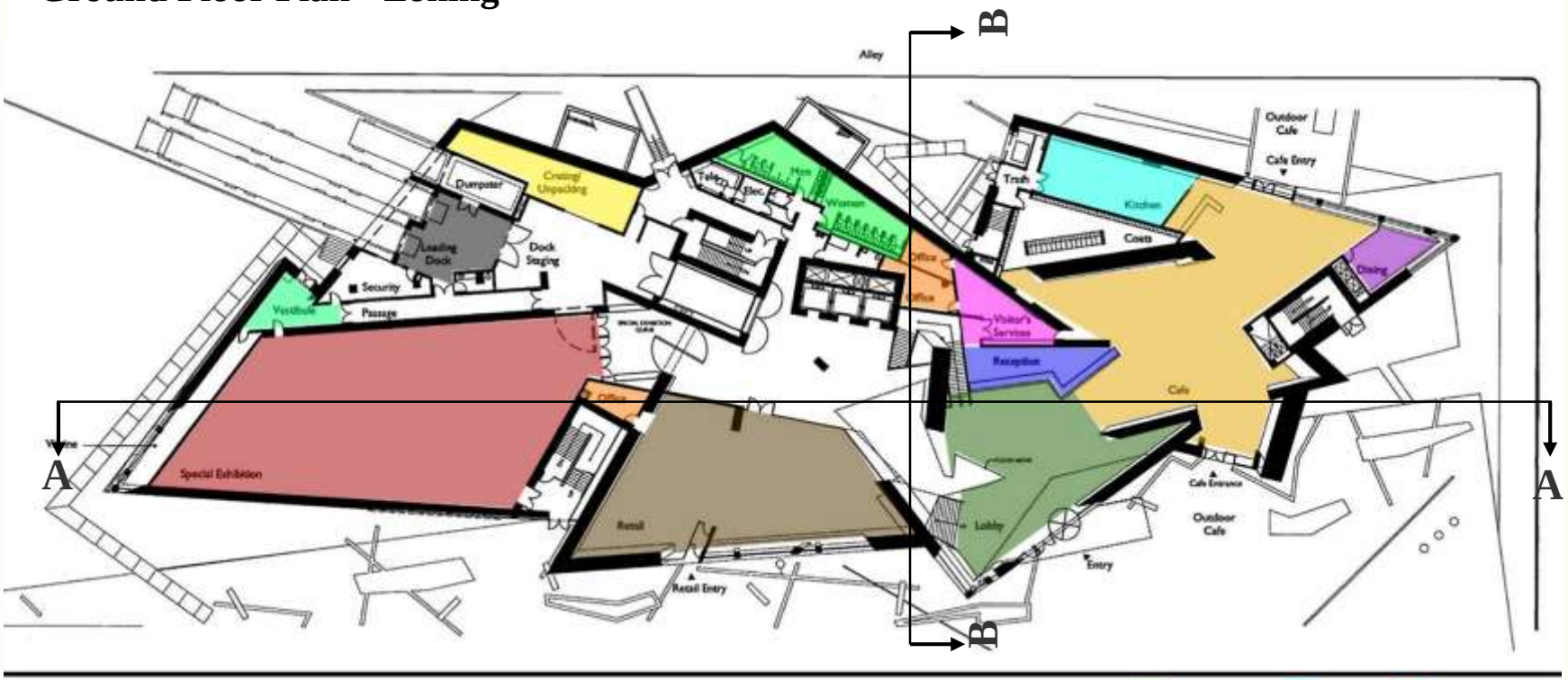
(Figure 3.35) Basement Floor Plan - Zoning

Basement Floor Plan - Circulation



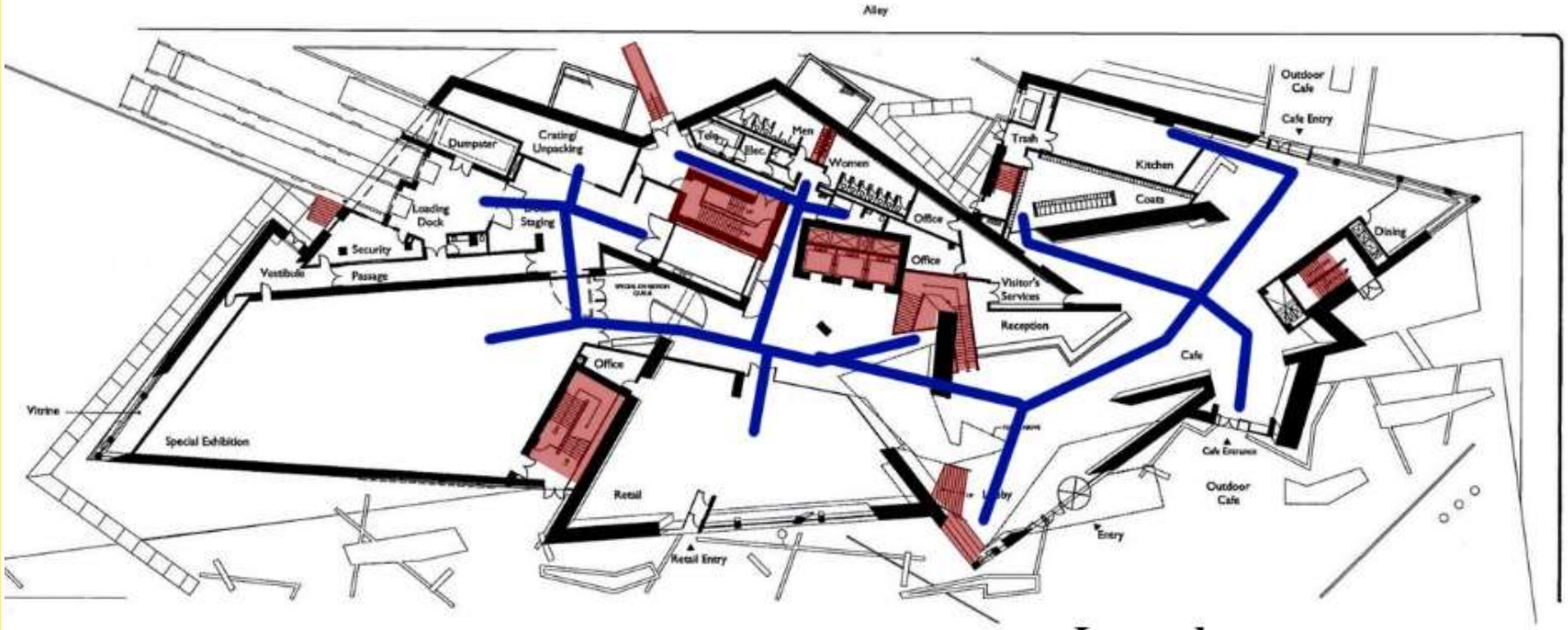
(Figure 3.36) Basement Floor Plan - Circulation

Ground Floor Plan - Zoning



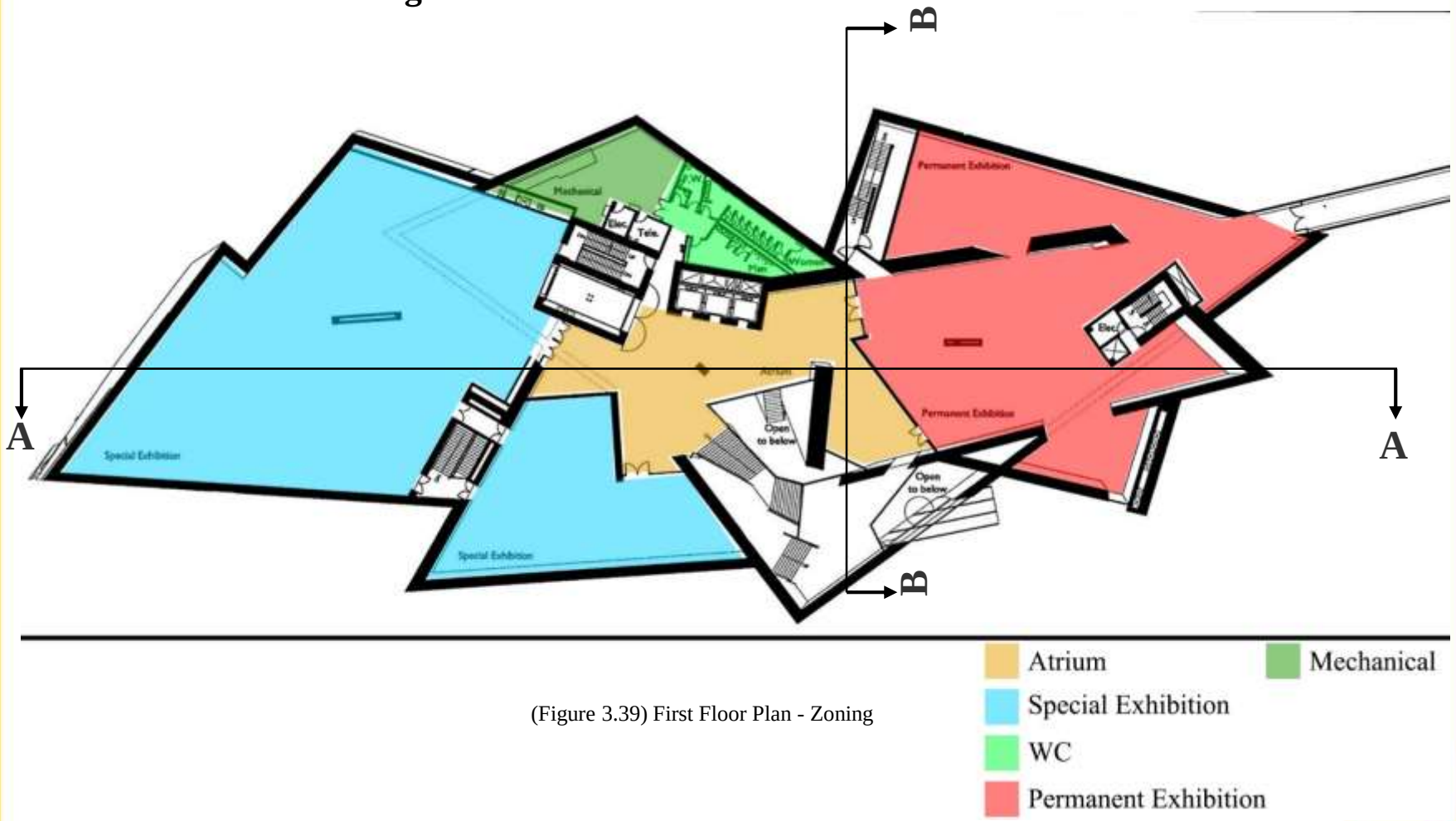
(Figure 3.37) Ground Floor Plan - Zoning

Ground Floor Plan - Circulation



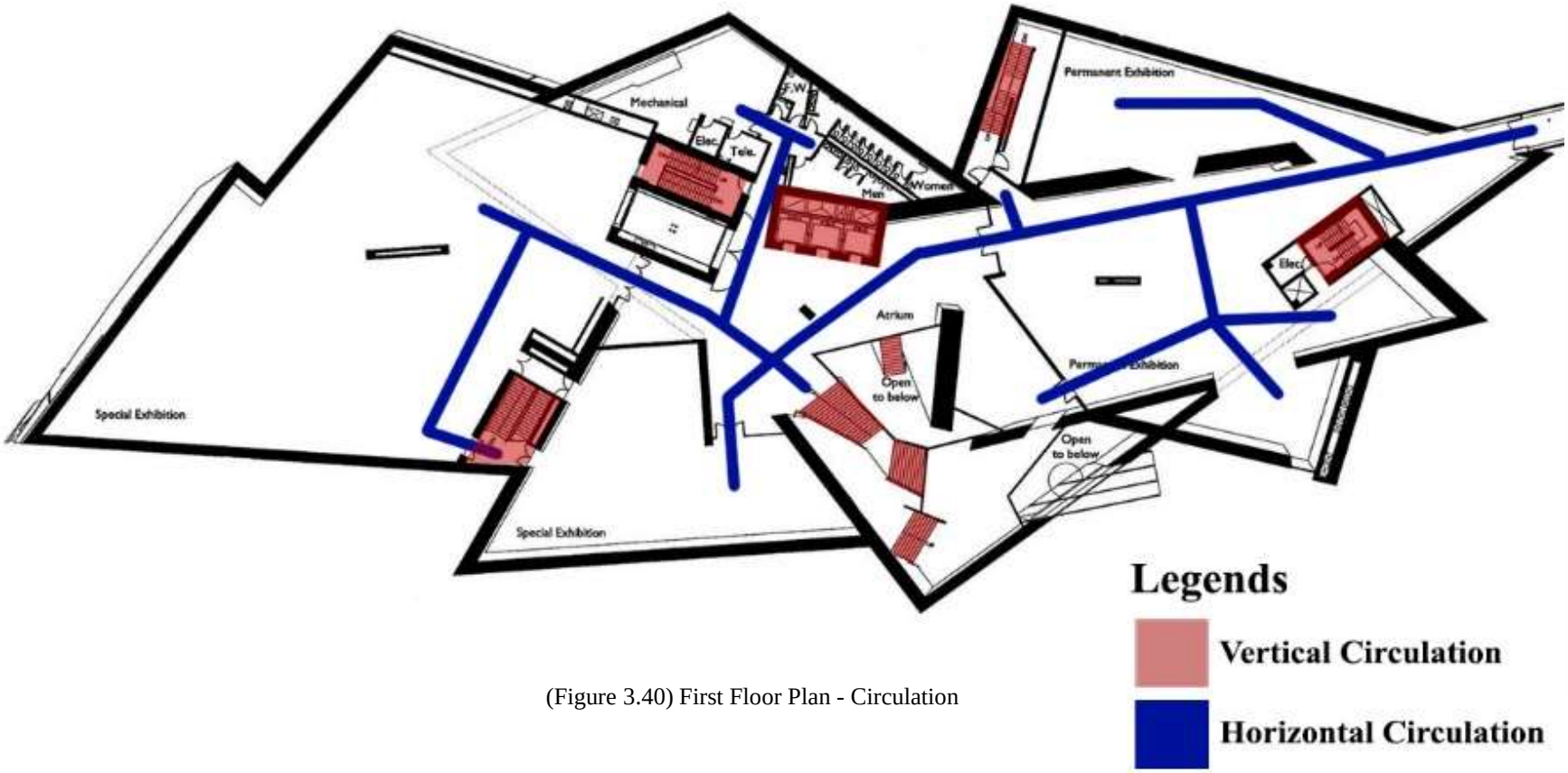
(Figure 3.38) Ground Floor Plan - Circulation

First Floor Plan - Zoning



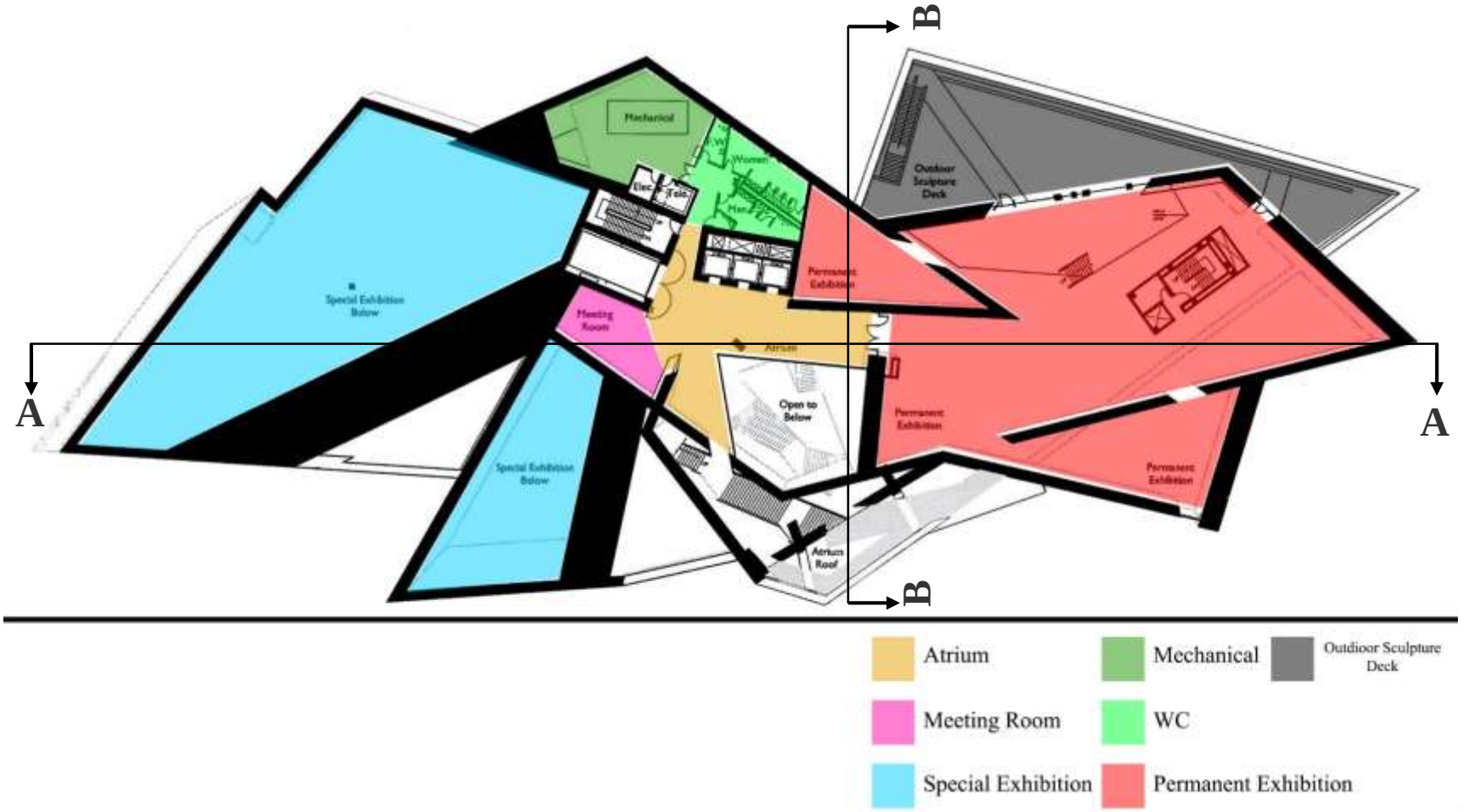
(Figure 3.39) First Floor Plan - Zoning

First Floor Plan - Circulation



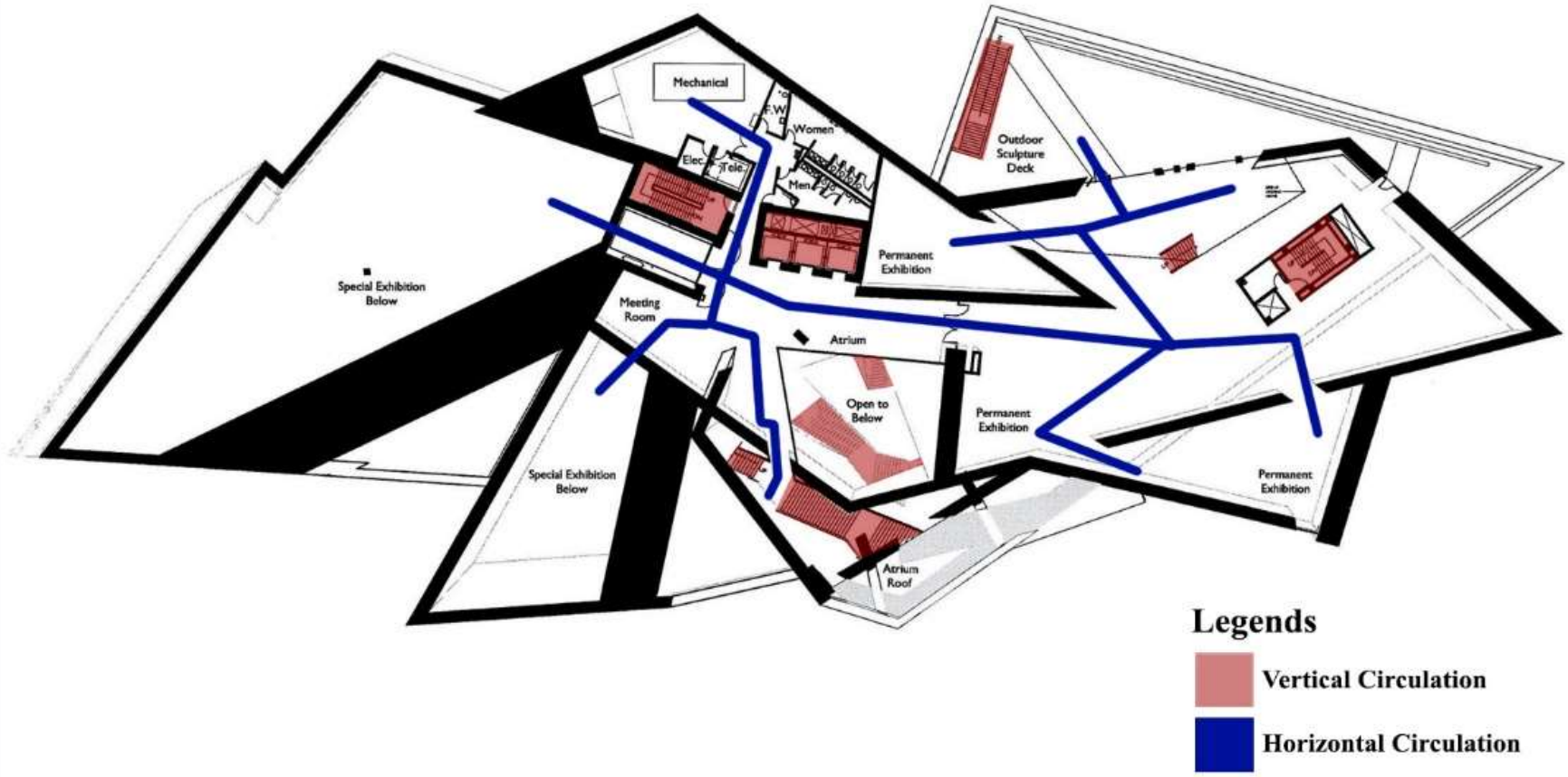
(Figure 3.40) First Floor Plan - Circulation

Second Floor Plan - Zoning



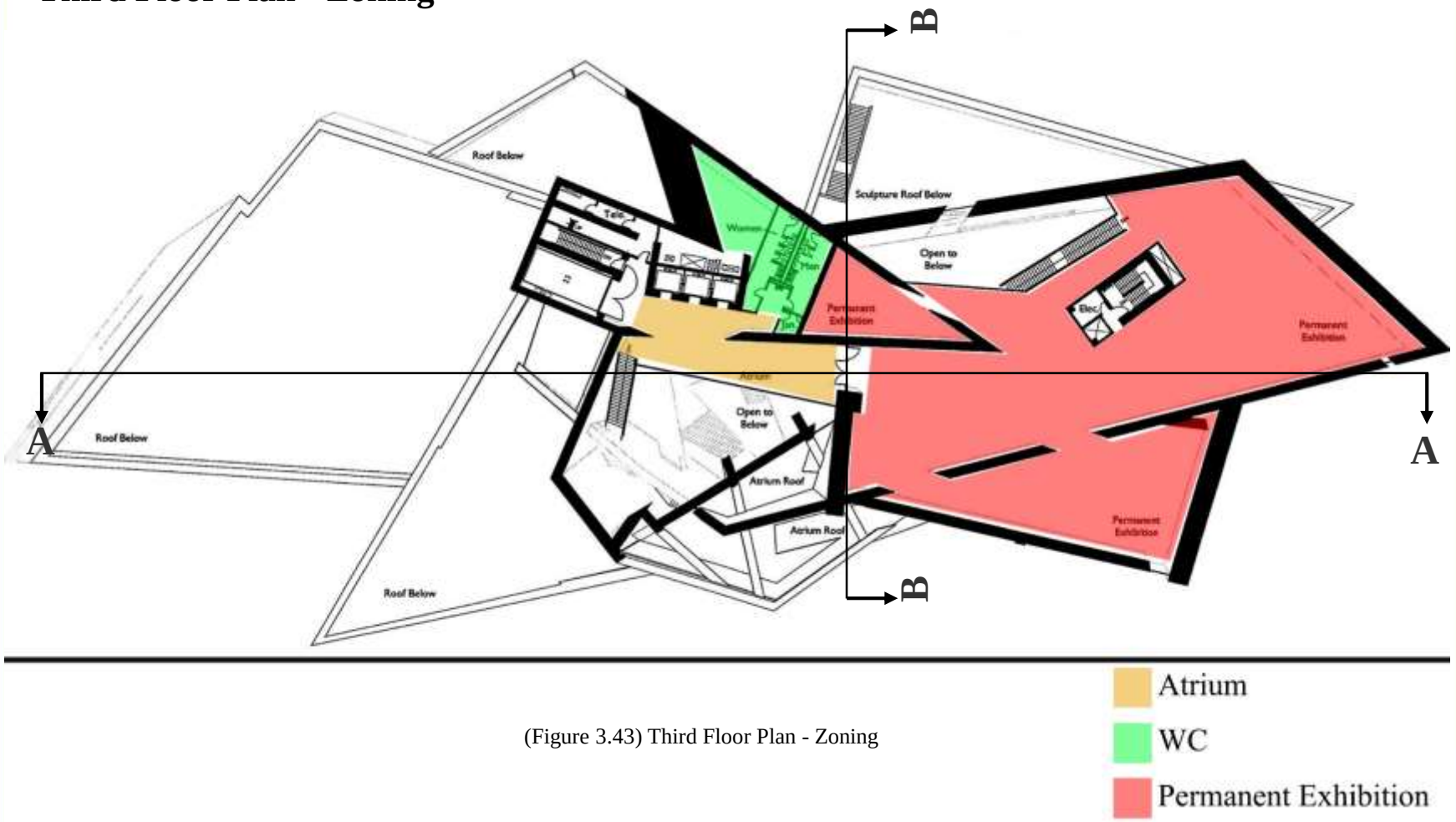
(Figure 3.41) Second Floor Plan - Zoning

Second Floor Plan - Circulation



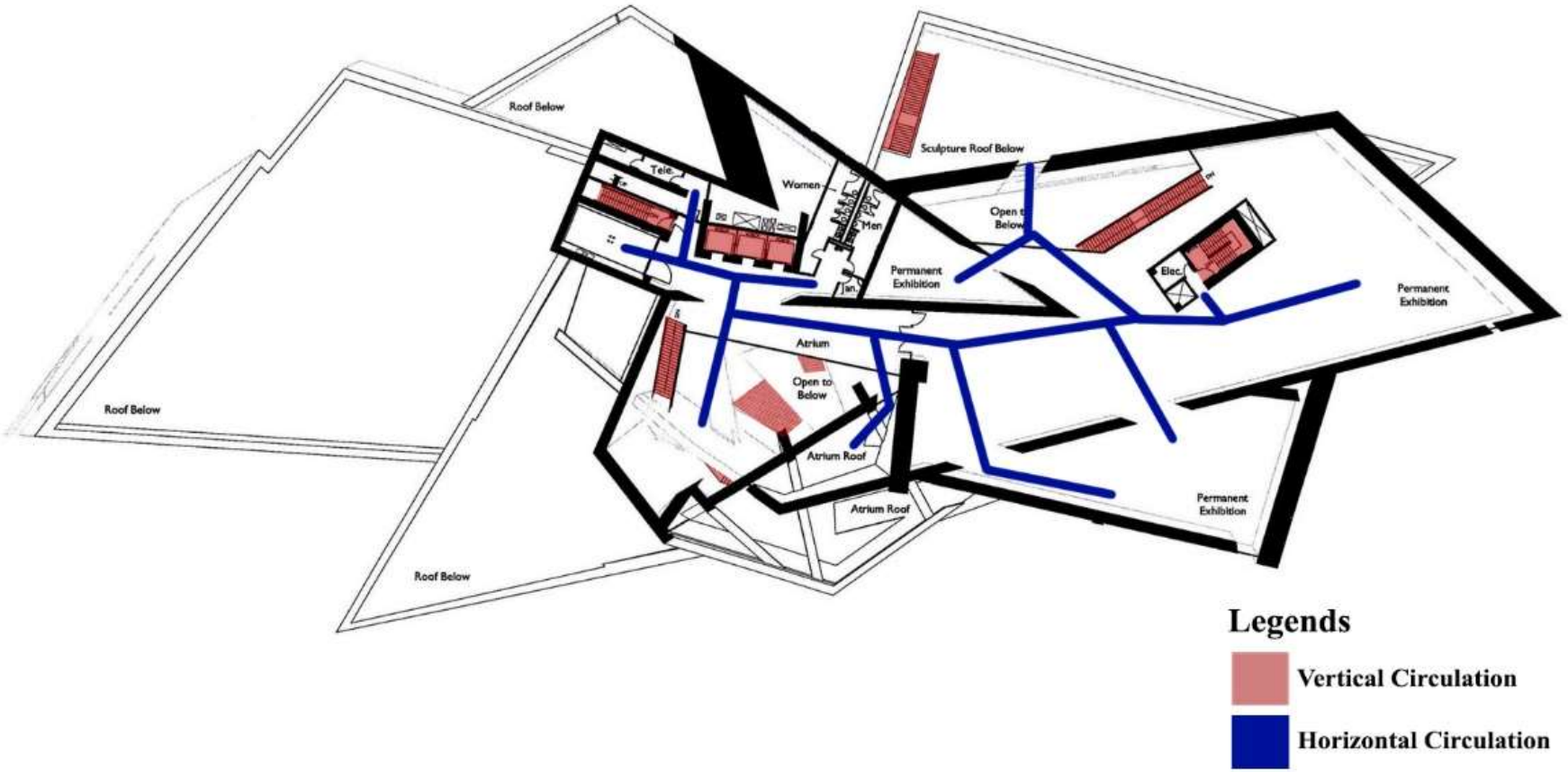
(Figure 3.42) Second Floor Plan - Circulation

Third Floor Plan - Zoning



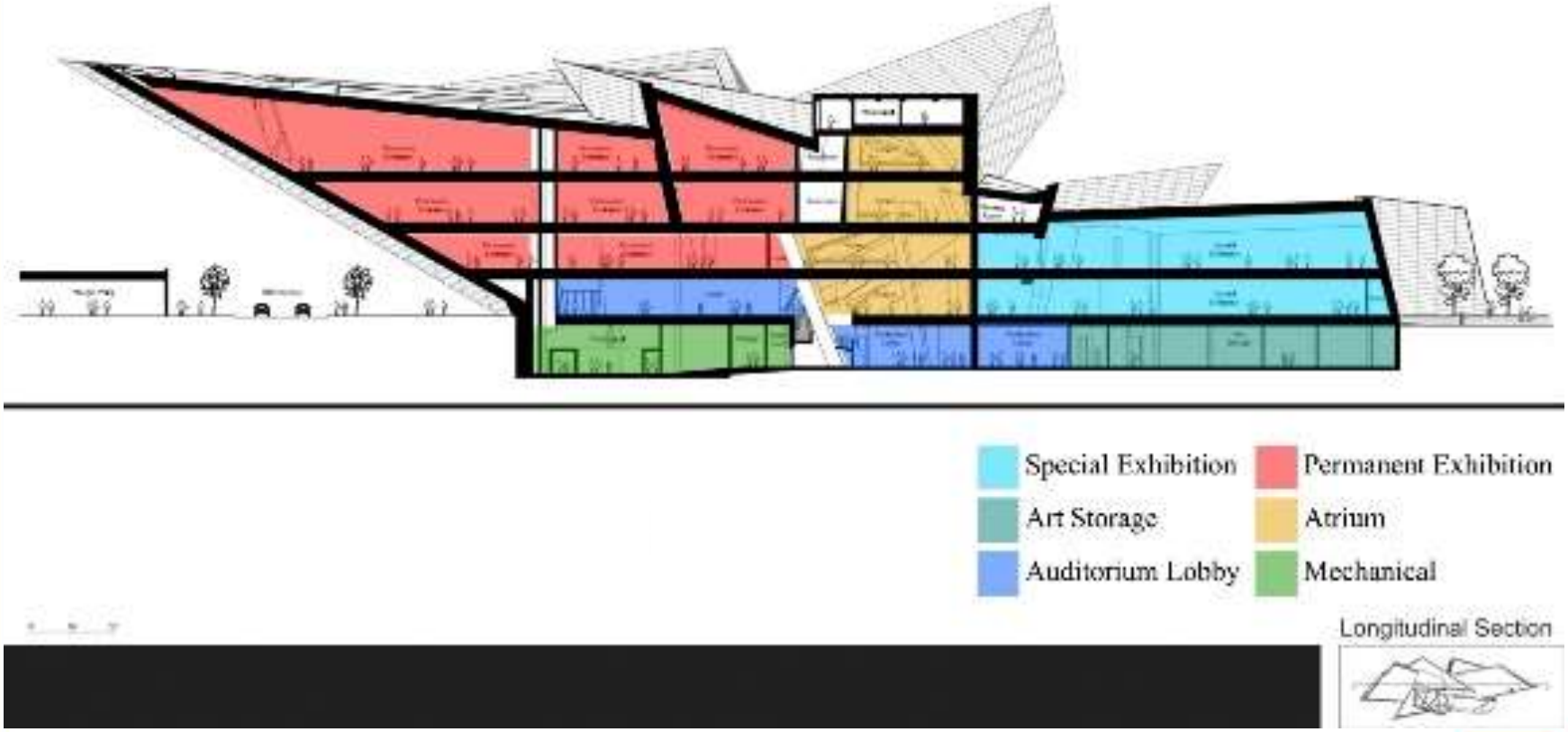
(Figure 3.43) Third Floor Plan - Zoning

Third Floor Plan - Circulation



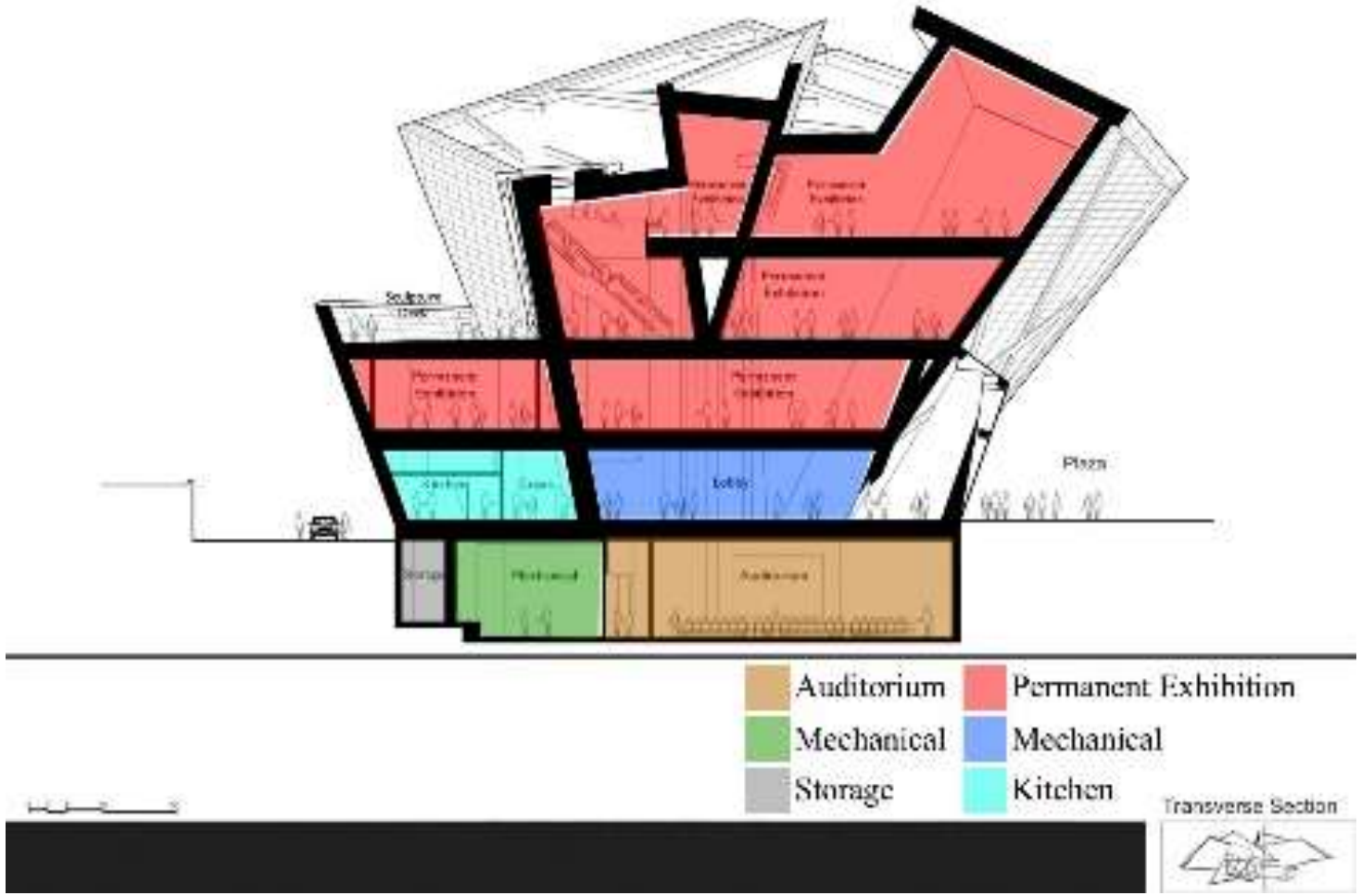
(Figure 3.44) Third Floor Plan - Circulation

Longitudinal Section (A-A)



(Figure 3.45) Longitudinal Section (A-A)

Transverse Section (B-B)



(Figure 3.46) Transverse Section (B-B)

Circulation Analysis

Circulation is made with ease of access through the Building and giving the sense of Fluidity when moving through the different spaces and allowing good view from upper floors to the below floor. The Circulation Forms are as Interlocking and Aggressive as the Building Form itself, they provide fluidity and ease of access among all the Museum Spaces.

(Figure 3.47)
Interior View – Circulation

(Figure 3.48)
Interior View - Circulation

(Figure 3.49)
Interior View - Circulation

Structural Analysis

New Structural Systems are used in the Construction of DENVER Art Museum.

- The main Structure of the Building used are Steel and Concrete.
- Titanium and Granite are used for the Building Sidings.
- Glass is used as well for the purpose of lighting and to provide great views.

One of the challenges of building the Denver Art Museum was to work closely and respond to the extraordinary range of transformations in light, coloration, atmospheric effects, temperature and weather conditions unique to this City.

(Figure 3.50)
DENVER Art Museum - Construction

Interior Views - Exhibitions

(Figure 3.51) Interior View - Exhibition

(Figure 3.52) Interior View - Exhibition

(Figure 3.53) Interior View - Exhibition

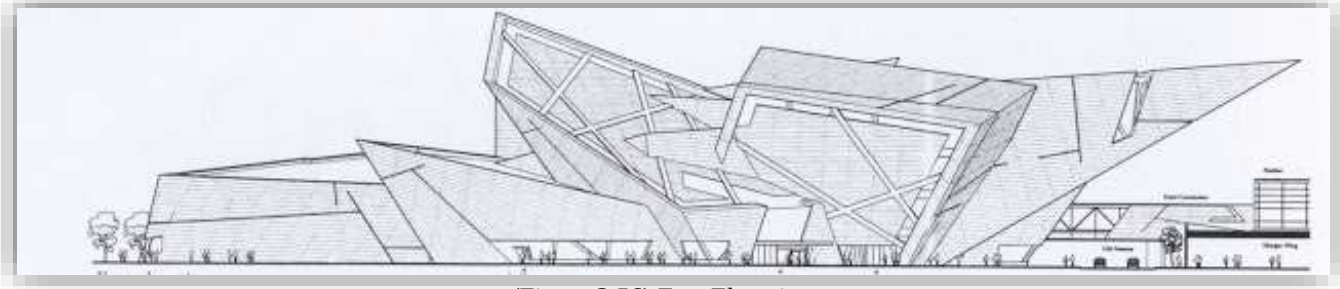
Interior Views

(Figure 3.54)
Interior View - Circulation

(Figure 3.55)
Interior View - Skylight

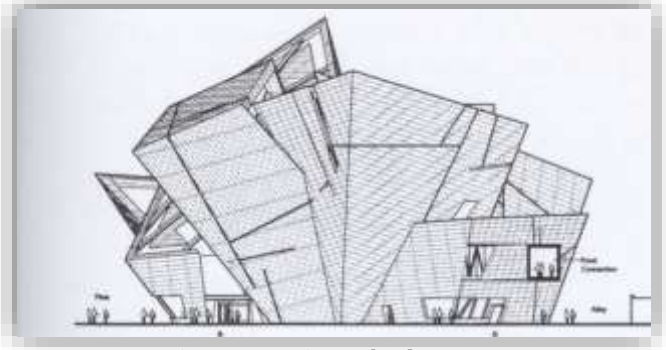
Elevation Analysis

The Materials used for Elevations are related to the Existing Context as well as innovation by using new materials such as Titanium.



(Figure 3.56) East Elevation

(Figure 3.57) West Elevation



(Figure 3.58) North Elevation

(Figure 3.59) South Elevation

Components and Areas

(Table 3.4) Basement Floor Plan

Component	Area (Sqm)
Art Storage	554
Unpacking	142
Conservation	31
Mechanical	96
Photography	53
Office	21
Auditorium Lobby	130
Board Room	77
Auditorium	290
WC	43
Register	172
Storage	22
Backstage Room	17

(Table 3.5) Ground Floor Plan

Component	Area (Sqm)
Lobby	138
Café	250
Reception	24
Visitor Service	26
Dining	17
Kitchen	48
Office	28
WC	46
Retail	206
Special Exhibition	396
Vestibule	18
Loading Dock	44
Unpacking	43

Components and Areas

(Table 3.6) First Floor Plan

Component	Area (Sqm)
Atrium	280
Special Exhibition	993
WC	51
Permanent Exhibition	620
Mechanical	67

(Table 3.7) Second Floor Plan

Component	Area (Sqm)
Atrium	134
Meeting Room	46
Special Exhibition	740
Mechanical	93
WC	50
Permanent Exhibition	822
Outdoor Sculpture Deck	260

Components and Areas

(Table 3.8) Third Floor Plan

Component	Area (Sqm)
Atrium	99
WC	50
Special Exhibition	1063

Advantages and Disadvantages of the Project

Advantages:

- It became a Landmark for DENVER City.
- Different with its Neighborhood (Contrast with Surrounding).
- New Type of Building with Using New Structural Systems.
- Have very good Natural Lighting.

Disadvantages:

- Does not match the Design of Surrounding Urban Fabric.

3.4 Example 3: TAUBMAN Art Museum

Architect: Randall Stout Architects
Total Site Area: 81000 sq. ft.
Building Type: Art Museum
Location: Virginia, USA
Construction Year: 2008

The Taubman Museum of Art is part of the lively metro mountain mix of arts, culture and outdoor fun in the heart of downtown Roanoke, Virginia. The Museum offers 11 galleries as part of the Fralin Center for American Art.
The Museum is also home to permanent collections.

(Figure 3.60) 3D View

Concept

The Form Concept of the Building reflects the dramatically View of the Surrounding Mountainous Landscape.
The building's forms and materials interpret the beauty and drama of the surrounding Shenandoah Valley landscape framed by the Blue Ridge and Appalachian Mountains.

(Figure 3.61) 3D View with Surrounding

(Figure 3.62) Concept Sketch by Architect

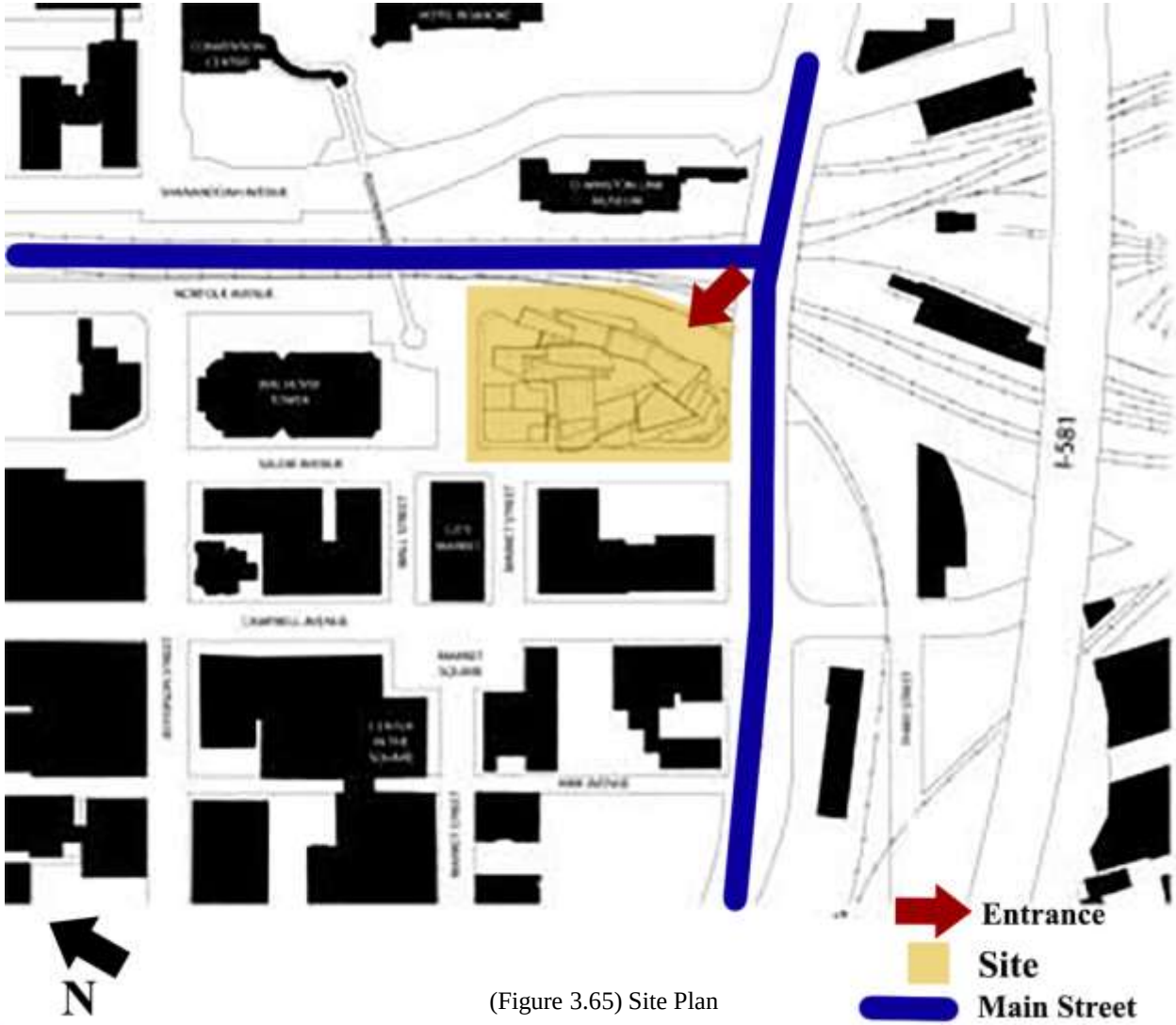
Materials

- The finishing of the roof is made from (Stainless Steel) that reflect the variety of colors found in the sky and the seasonal landscape.
- Emergence of translucent glass surfaces from the buildings mass to create canopies of soft diffused light over public spaces and gallery level. These emerged glass is inspired by the mountain streams.
- A layered pattern of angular exterior walls support the stainless steel roof. This wall is made from Zinc to give earthen and aged quality to the façade.
- Hokie Stone, which is native to western Virginia, is used in the lobby and theatre foyer to give texture and color to the interior.

(Figure 3.63) 3D View

(Figure 3.64) 3D View

Site Plan - Zoning

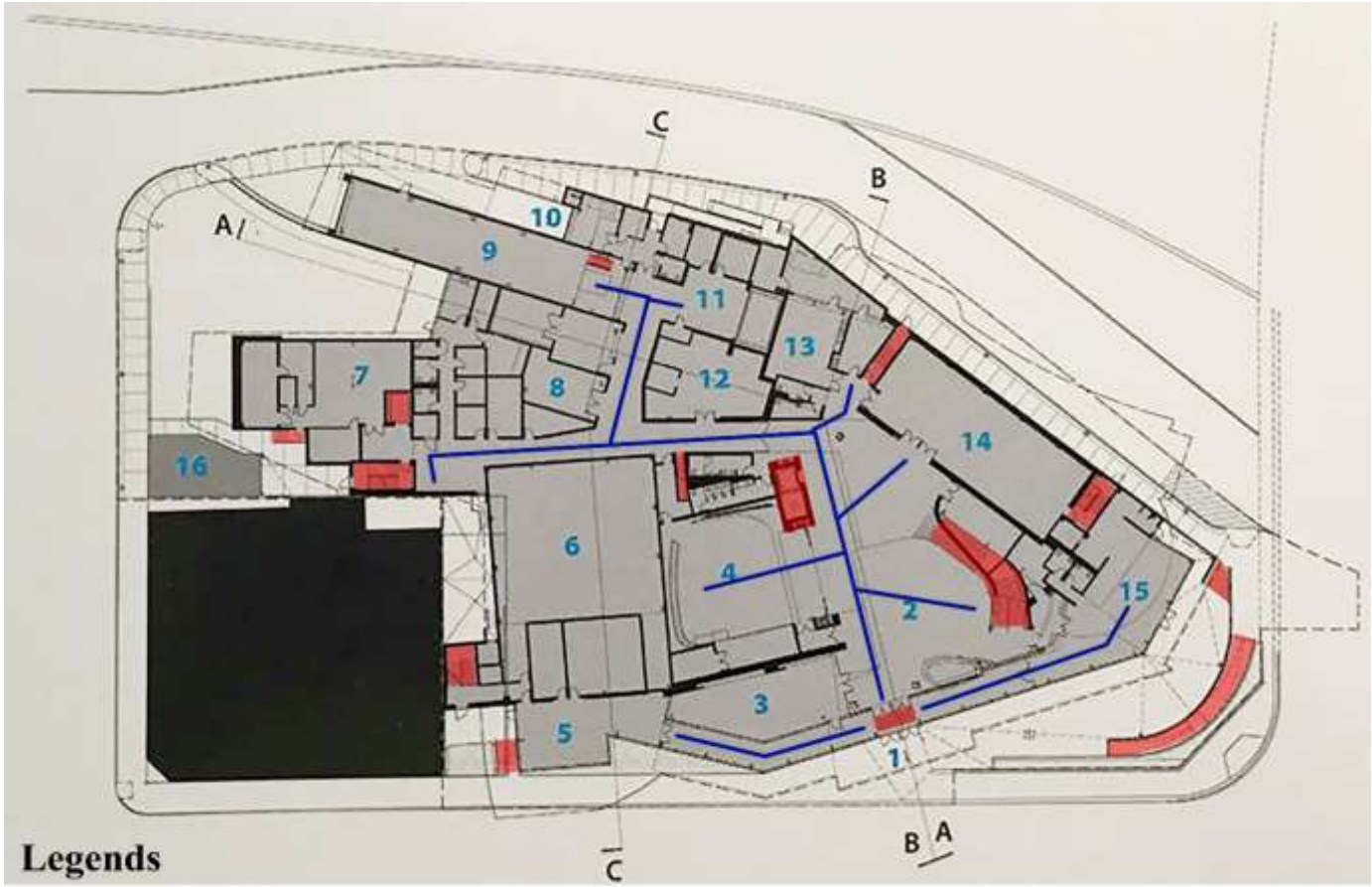


(Figure 3.65) Site Plan

Ground Level Plan - Zoning

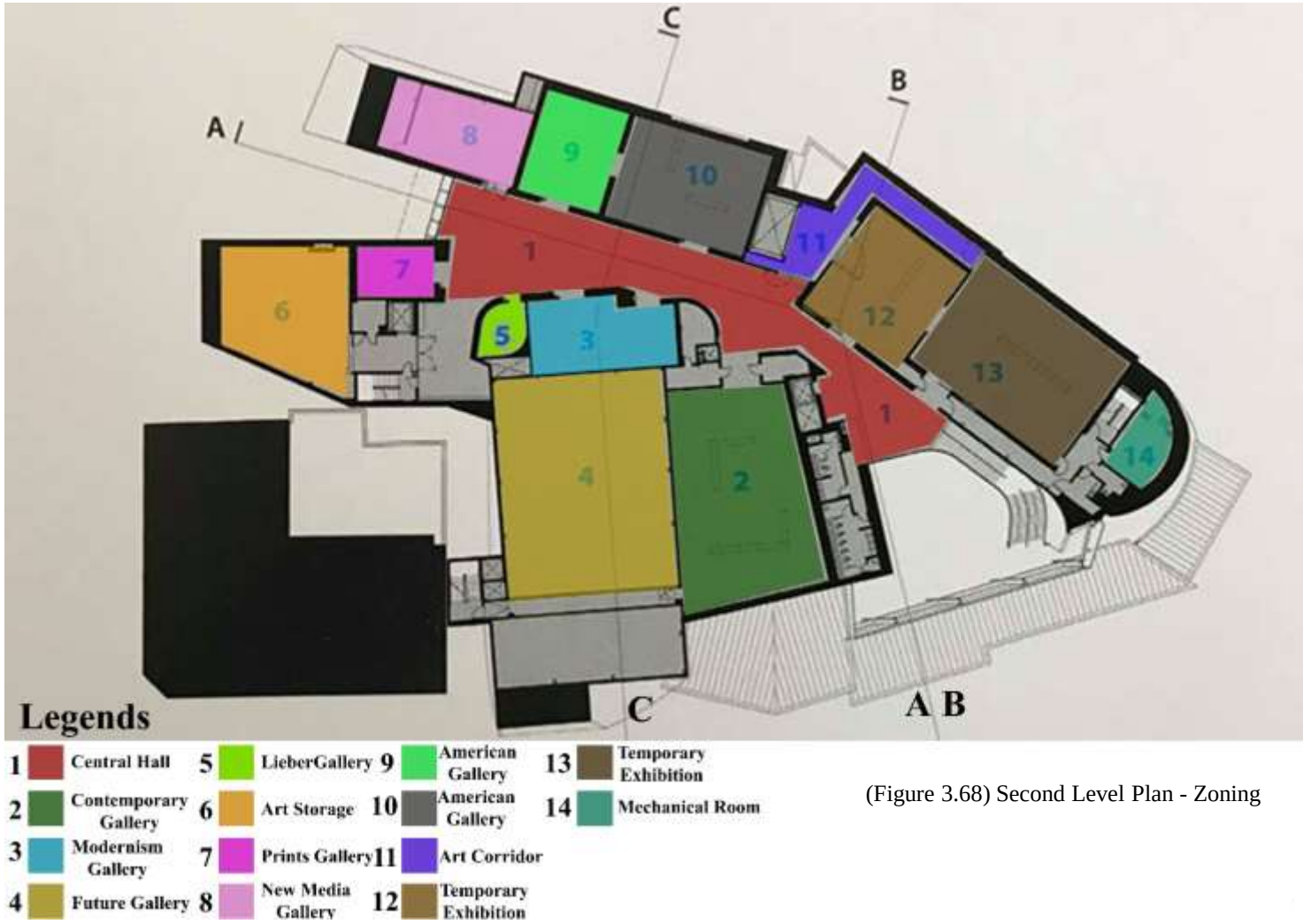
(Figure 3.66) Ground Level Plan - Zoning

Ground Level Plan - Circulation



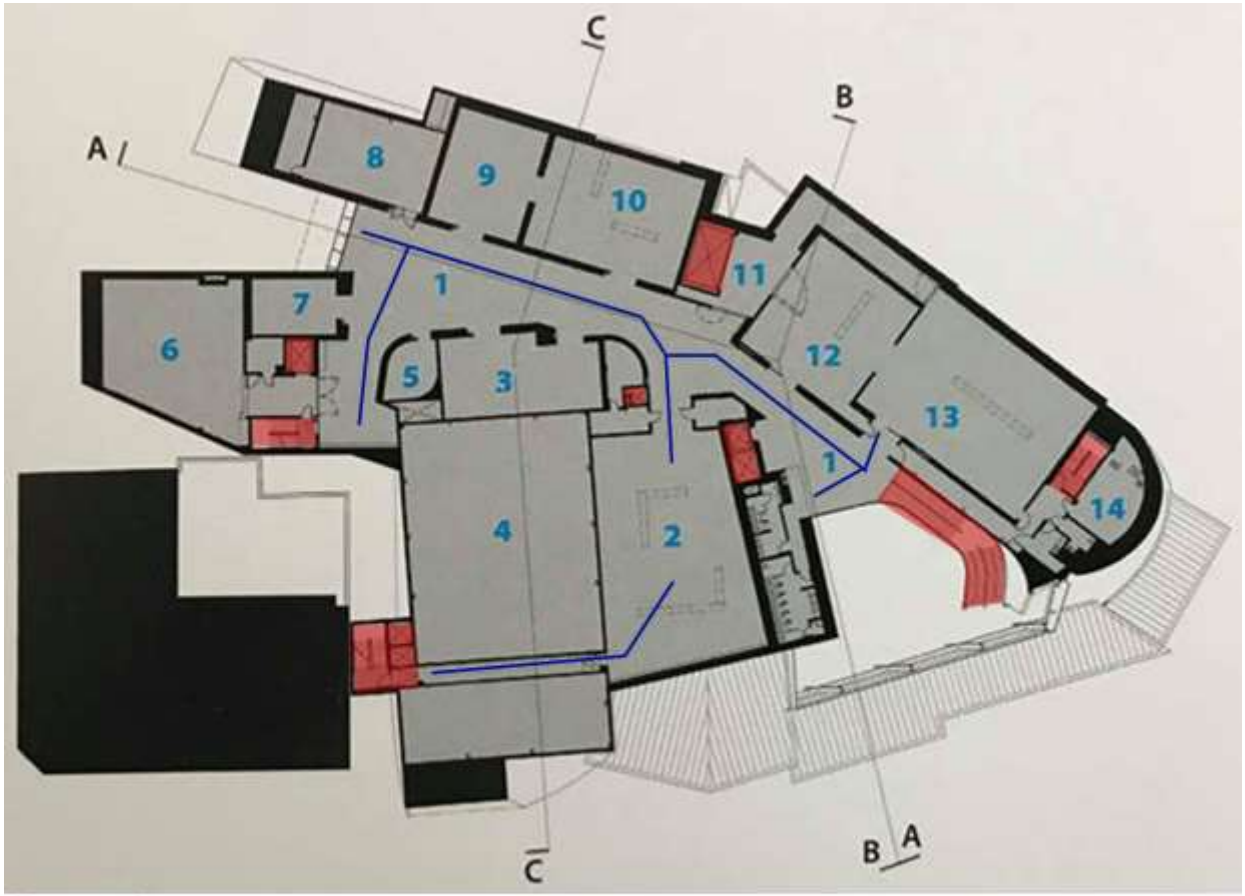
(Figure 3.67) Ground Level Plan - Circulation

Second Level Plan - Zoning



(Figure 3.68) Second Level Plan - Zoning

Second Level Plan - Circulation



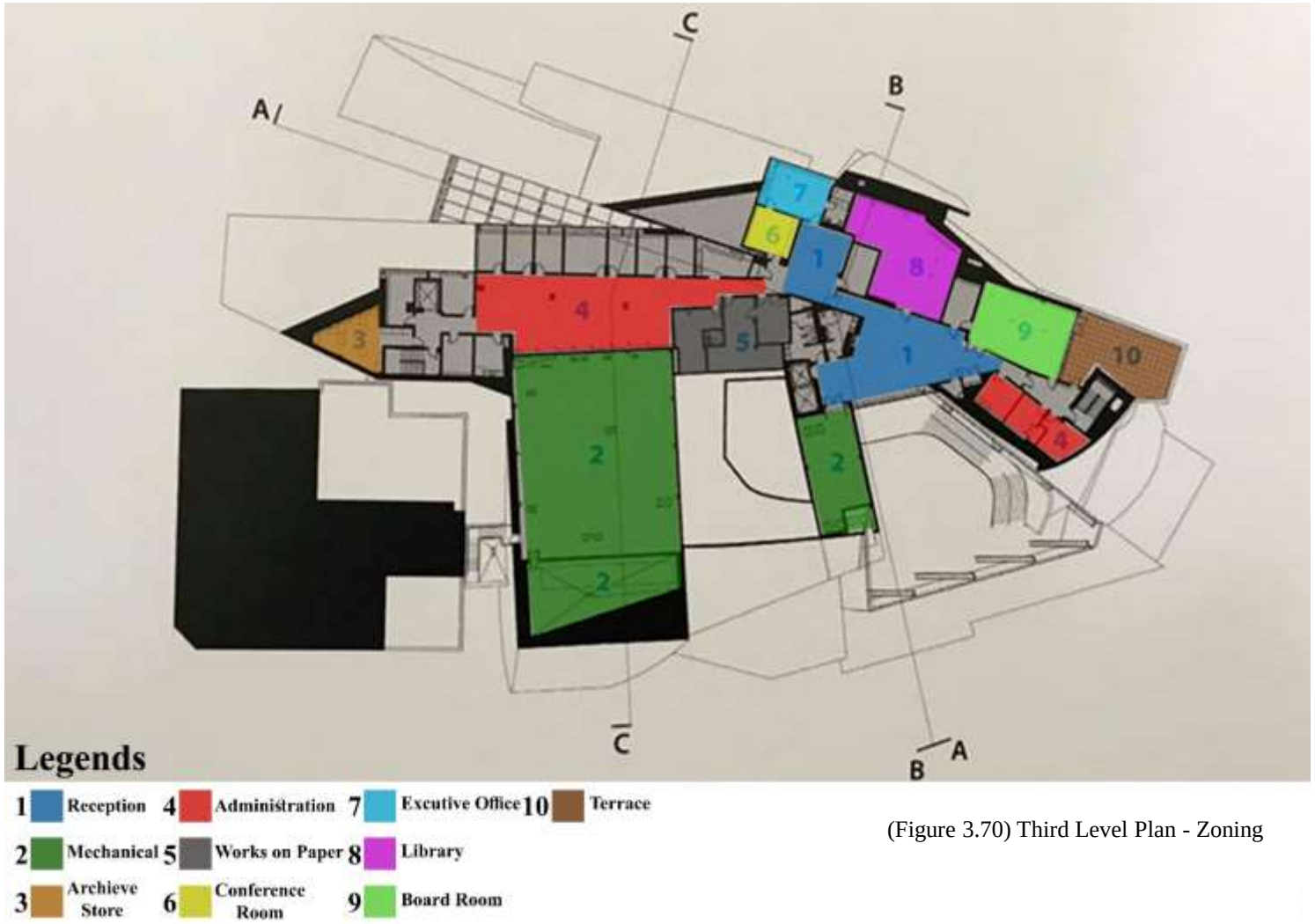
Legends

Vertical Circulation

Horizontal Circulation

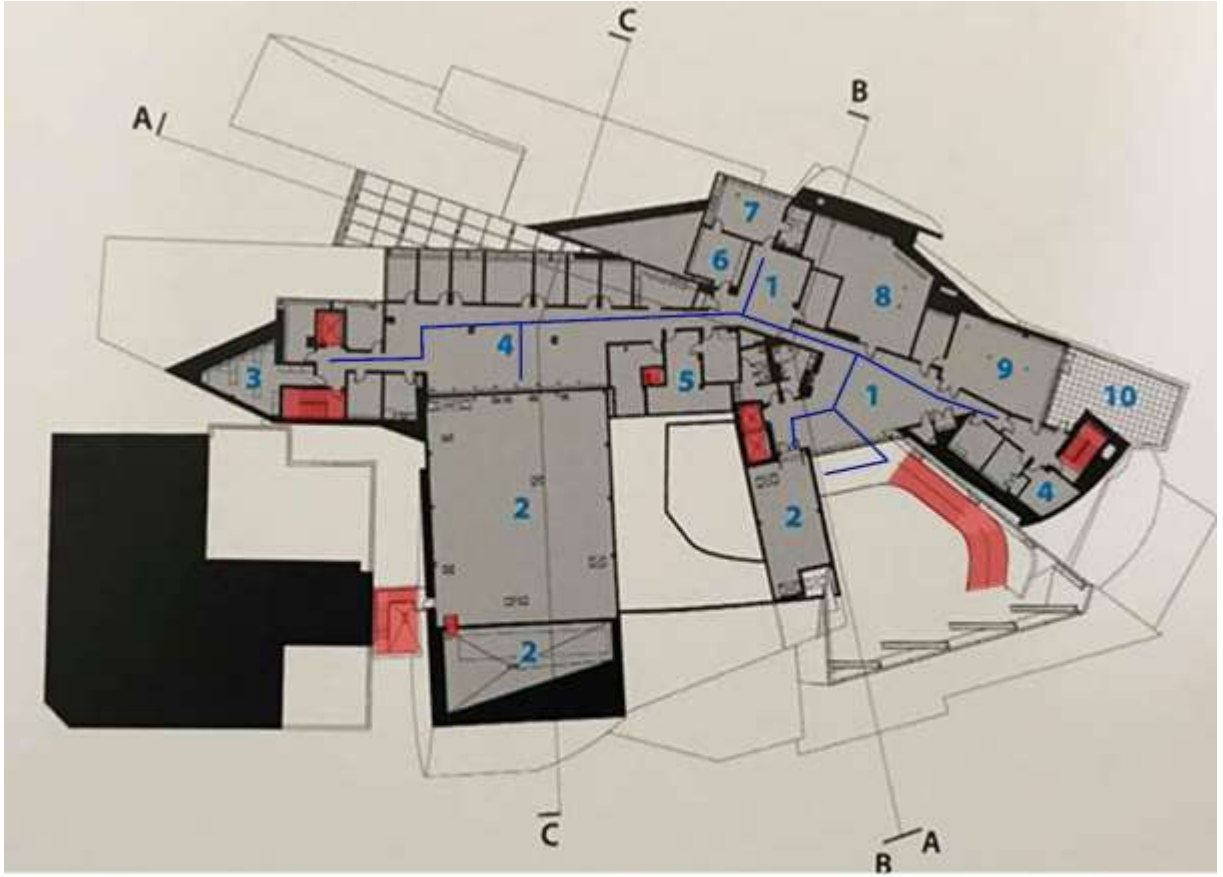
(Figure 3.69) Second Level Plan - Circulation

Third Level Plan - Zoning



(Figure 3.70) Third Level Plan - Zoning

Third Level Plan - Circulation



Legends

Vertical Circulation

Horizontal Circulation

(Figure 3.71) Third Level Plan - Circulation

Circulation Analysis

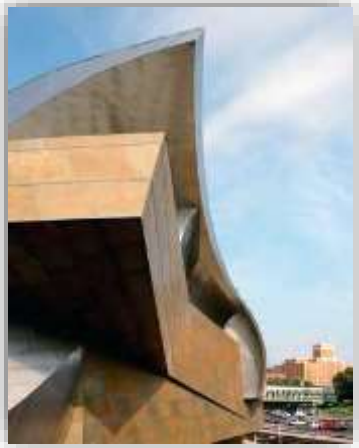
Light defines the primary circulation, fracturing the building at the second floor galleries to emerge into dynamic glass volumes at each end. Representing the hub for the entire facility, the volume of the lobby Atrium connects the two floors and rises to a peak of 75 feet. The top floor splits again, causing the roofs to part for clerestory light as it, along with the events terrace, projects outward and over the street below.

(Figure 3.72)
Roof Lightings Defining Circulations

(Figure 3.73)
Roof Lightings Defining Circulations

Structural Analysis

- The Main Structure of the Building (the Exterior Walls) are made of Cement Fiber Panels, but the Interior Walls are made of Gray Limestone.
- The Roofs are made of Stainless Steel.
- The Building Structure with these Forms and Textures reflect the eroded Rock Surfaces found in the regions famous cliffs and river gorges.



(Figure 3.74) 3D View

Interior Views

(Figure 3.75)
Interior View - Exhibition

(Figure 3.76)
Interior View - Exhibition

(Figure 3.77)
Interior View - Exhibition

Components and Areas

(Table 3.9) Ground Level Plan

Component	Area (Sqm)
Entrance	60
Lobby	595
Store	110
Auditorium	300
Theatre Foyer	95
Theatre	440
Mechanical	70
Service	300

Component	Area (Sqm)
Art Gallery	220
Café	200
Electrical	75
Art Handling (Hall)	200
Service	230
Kitchen	110
Studio	130

Components and Areas

(Table 3.10) Second Level Plan

Component	Area (Sqm)
Central Hall	325
Contemporary Gallery	245
Modernism Gallery	90
Future Gallery	330
Gallery	20
Storage	140
Gallery	35
Gallery	92
Gallery (A)	77
Gallery (B)	130
Art Corridor	70
Temporary Exhibition	125
Temporary Exhibition	203
Mechanical	33

Components and Areas

(Table 3.11) Third Level Plan

Component	Area (Sqm)
Reception	200
Mechanical	658
Store	38
Administration	274
Conference Room	26
Offices	43
Library	120
Terrace	94

Advantages and Disadvantages of the Project

Advantages:

- Using Materials and Form of Building to give sense of its Surrounding Landscape and Mountains.
- Good and Clear Circulation inside by using of Light.
- Using New Structure Systems as Glasses and Stainless Steel for Roofs.

Disadvantages:

- Focusing more on Exhibitions rather than other activities as Conferences and Artists Activities.

3.5 Example 4: LOUVRE ABU DHABI

Architect: Ateliers Jean Nouvel.
Total Site Area: 97000 sqm.
Building Type: Art and Civilization Museum.
Location: Abu Dhabi, United Arab Emirates
Project Year: 2017

(Figure 3.78) General View

Concept

Combination of Geometrical and Organic Shape to Create a sense of welcoming area with Combination of Light and Shadows, Reflection and Calm. The building is tried to be in a way that will belong to the Country and its History.

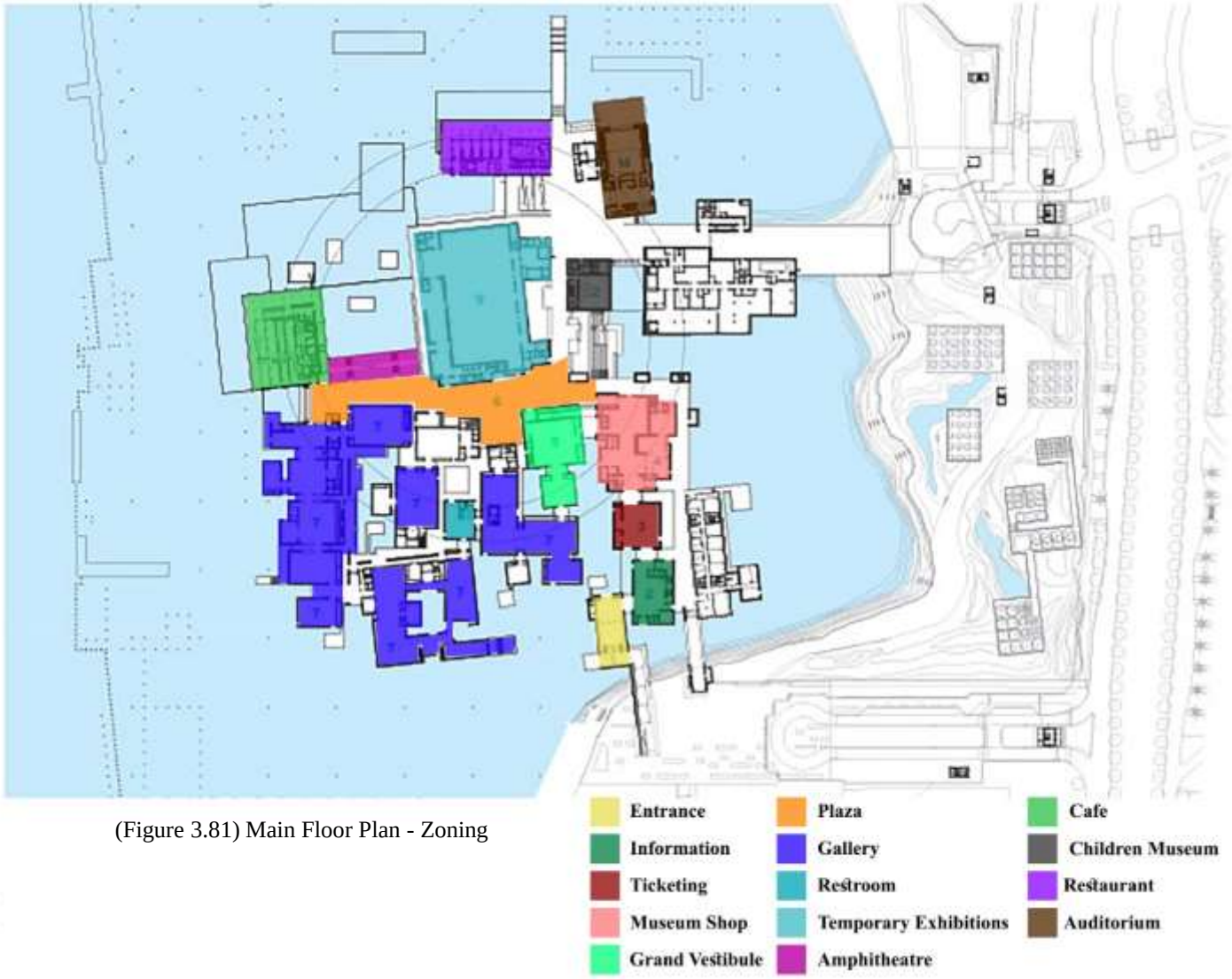
Site (Top View)

(Figure 3.79) Site (Top View)

Site Plan - Zoning

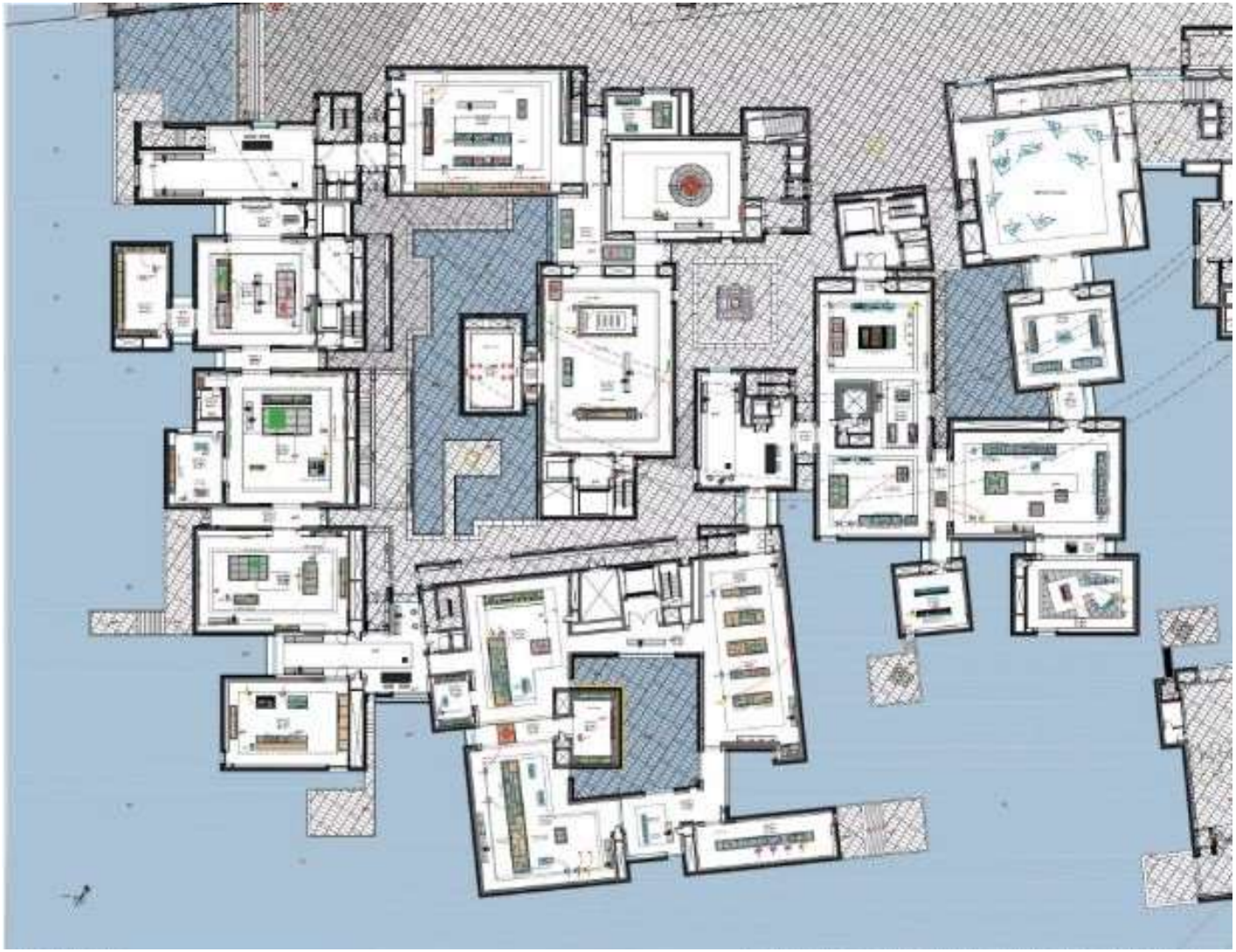
(Figure 3.80) Site Plan

Main Floor Plan - Zoning



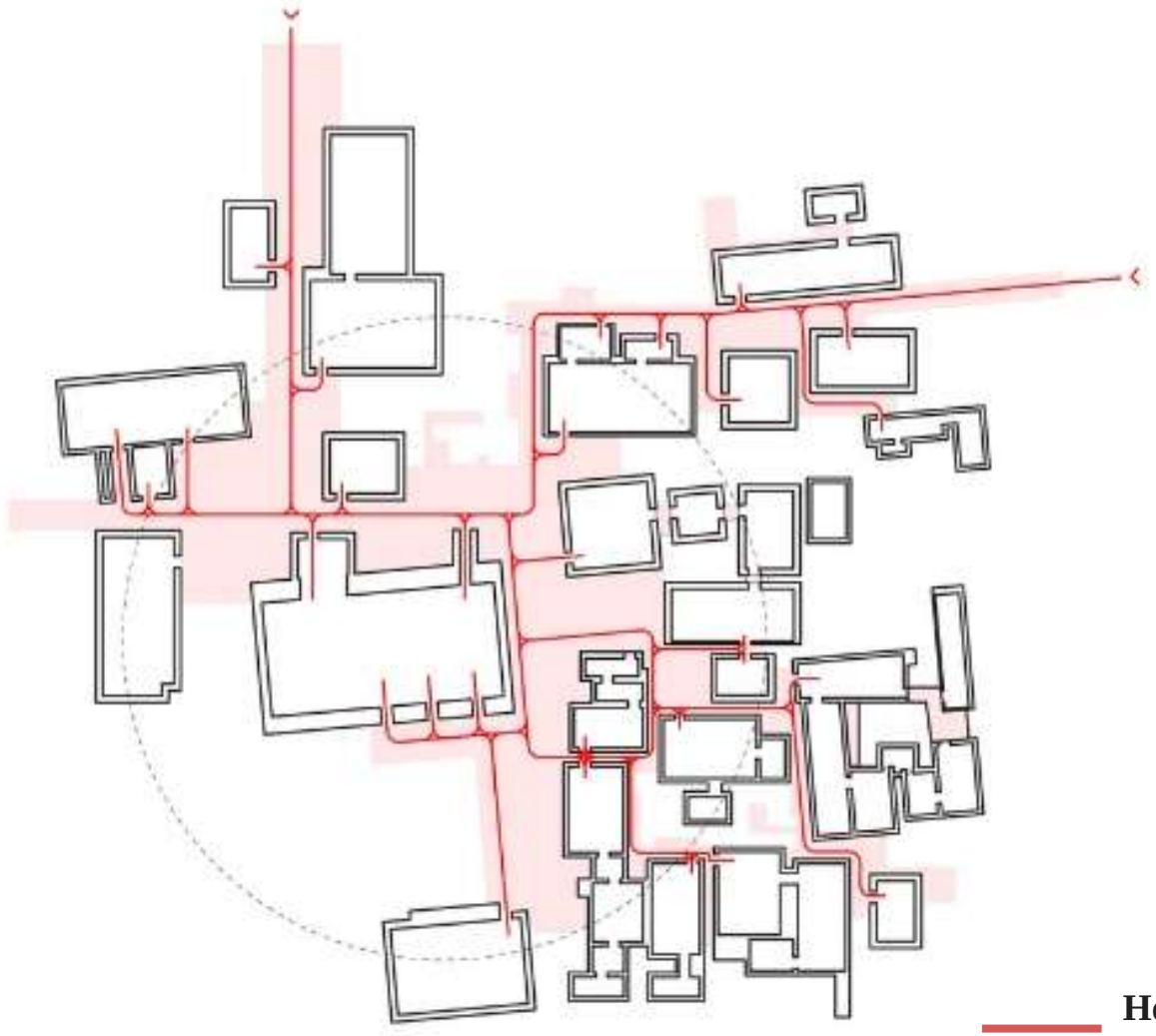
(Figure 3.81) Main Floor Plan - Zoning

Galleries - Plan



(Figure 3.82) Galleries - Plan

Galleries - Circulation



Horizontal Circulation

(Figure 3.83) Galleries - Circulation

General 3D Views

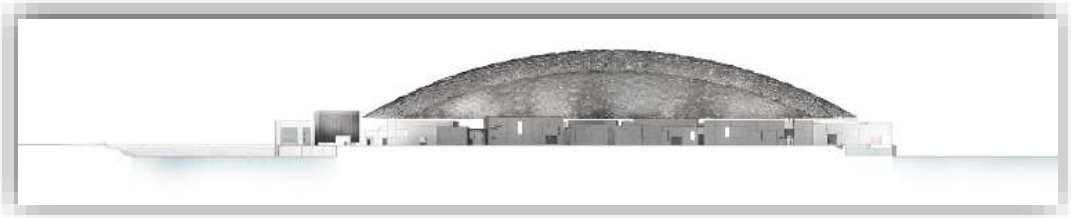
(Figure 3.84) General View

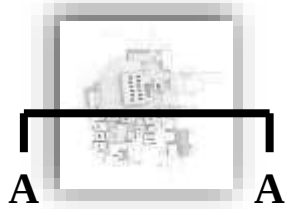
(Figure 3.85) General View

(Figure 3.86) General View

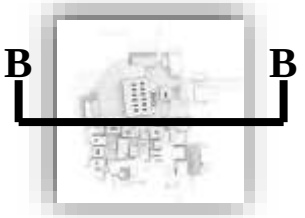
(Figure 3.87) General View

Sections

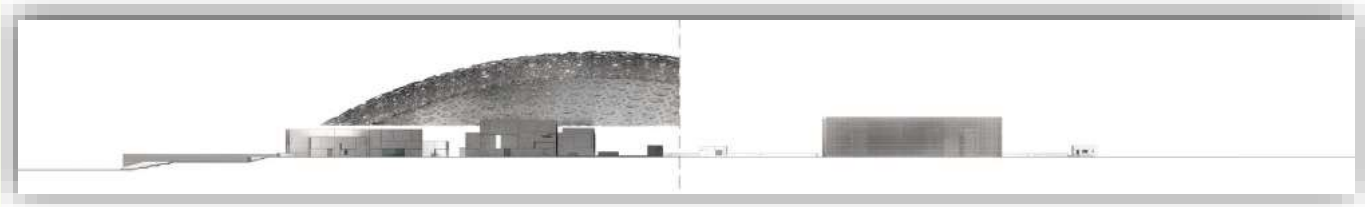


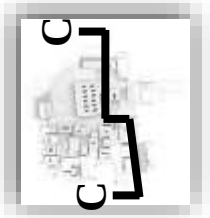


(Figure 3.88) Section (A-A)

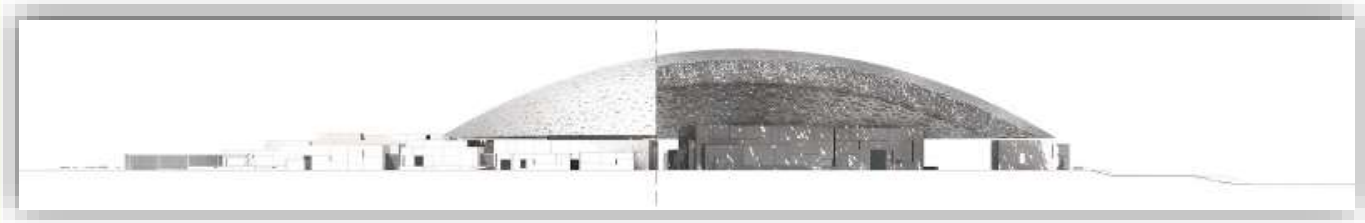


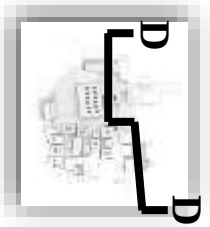
(Figure 3.89) Section (B-B)





(Figure 3.90) Section (C-C)





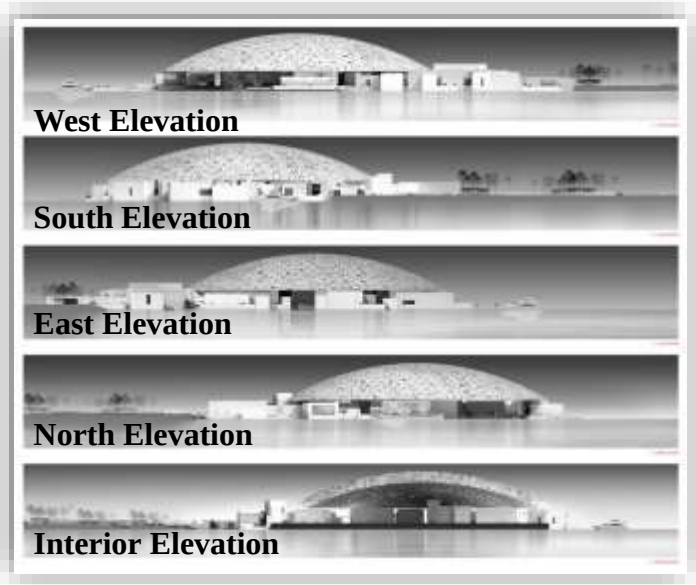
(Figure 3.91) Section (D-D)

Elevation Analysis

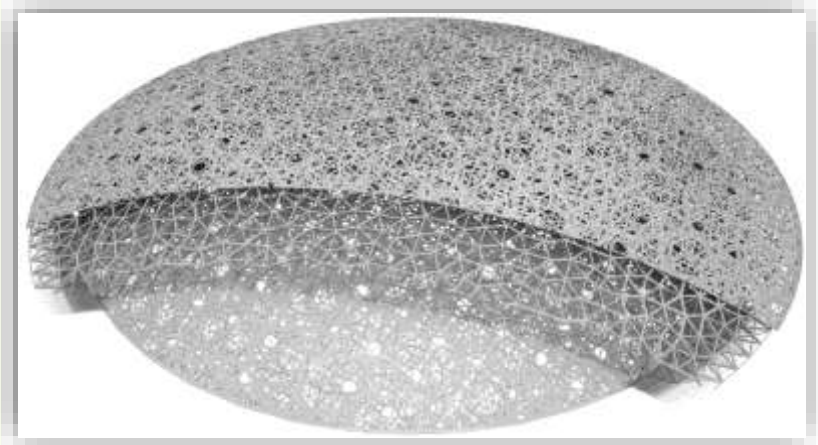
A double dome 180 meters in diameter, offering horizontal, perfectly radiating geometry, a randomly perforated woven material, providing shade punctuated by bursts of sun. The dome gleams in the Abu Dhabi sunshine. At night, this protected landscape is an oasis of light under a starry dome.

Structure and Materials

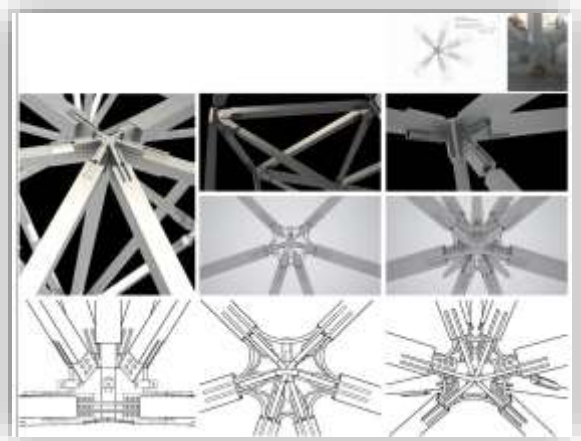
- The Structure of the Building appears to float over water.
- The Great Dome measures 180 m in Diameter and supported by 4 Pillars which are hidden within Building.
- Metal Star Shapes form 8 Layers.
- The Outer Dome is made from Stainless Steel.
- The Inner Dome is made of Aluminum.



(Figure 3.92) Elevations



(Figure 3.93) Inner and Outer Dome



(Figure 3.94) Joint and Member Details

Interior Views

(Figure 3.95) Interior View

(Figure 3.96) Interior View

(Figure 3.97) Interior View

(Figure 3.98) Interior View

(Figure 3.99) Interior View

Interior Views

(Figure 3.100) Interior View

(Figure 3.101) Interior View

(Figure 3.102) Interior View

(Figure 3.103) Interior View

Components and Areas

(Table 3.12) Main Floor Plan

Component	Area (Sqm)
Entrance	31
Information	51
Ticketing	33
Museum Shop	130
Grand Vestibule	78
Plaza	280
Gallery	1135
Restroom	27
Temporary Exhibition	368
Amphitheatre	47
Café	145
Children Museum	54
Restaurant	140
Auditorium	138

Advantages and Disadvantages of the Project

Advantages:

- Using more than a Shape in the Design (Geometrical and Organic).
- Recall of the Country's History.
- Combining light and Shadow together by using Patterns.

Disadvantages:

- Openings in the Dome can lead to leakage into between the masses.

3.6 Example 5: ELI & EDYTHE BROAD ART MUSEUM

Architect: Zaha Hadid with Patrik Schumacher.
Total Site Area: 46000 sqm.
Building Type: Art Museum.
Location: Michigan State University, East Lansing, USA
Project Year: 2012

(Figure 3.104) General 3D View

(Figure 3.105) General 3D View

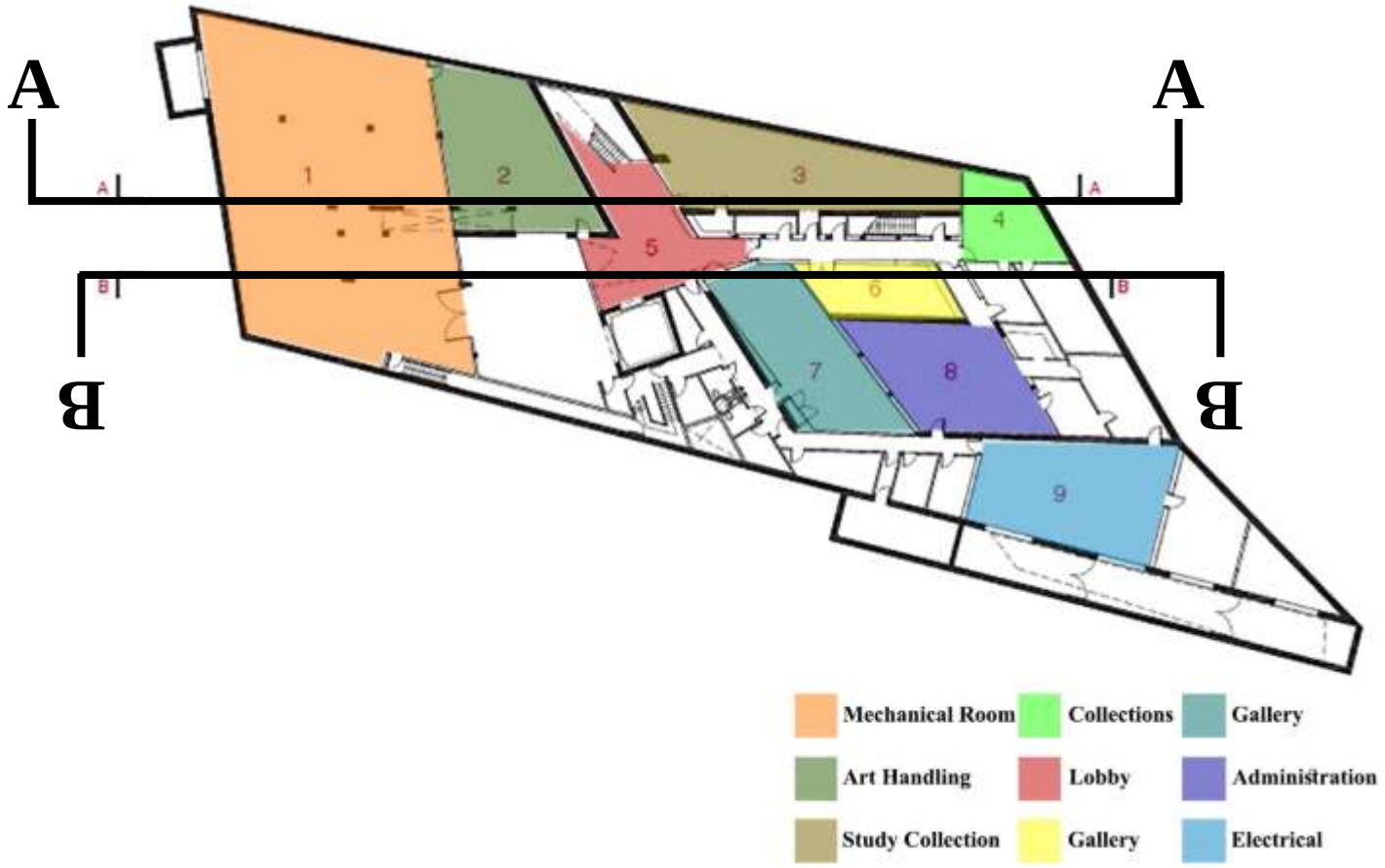
Concept

This Museum Represents Sharp and direct body Mass, which reflects the Topography and its Surrounding Landscape.

Site Plan - Zoning

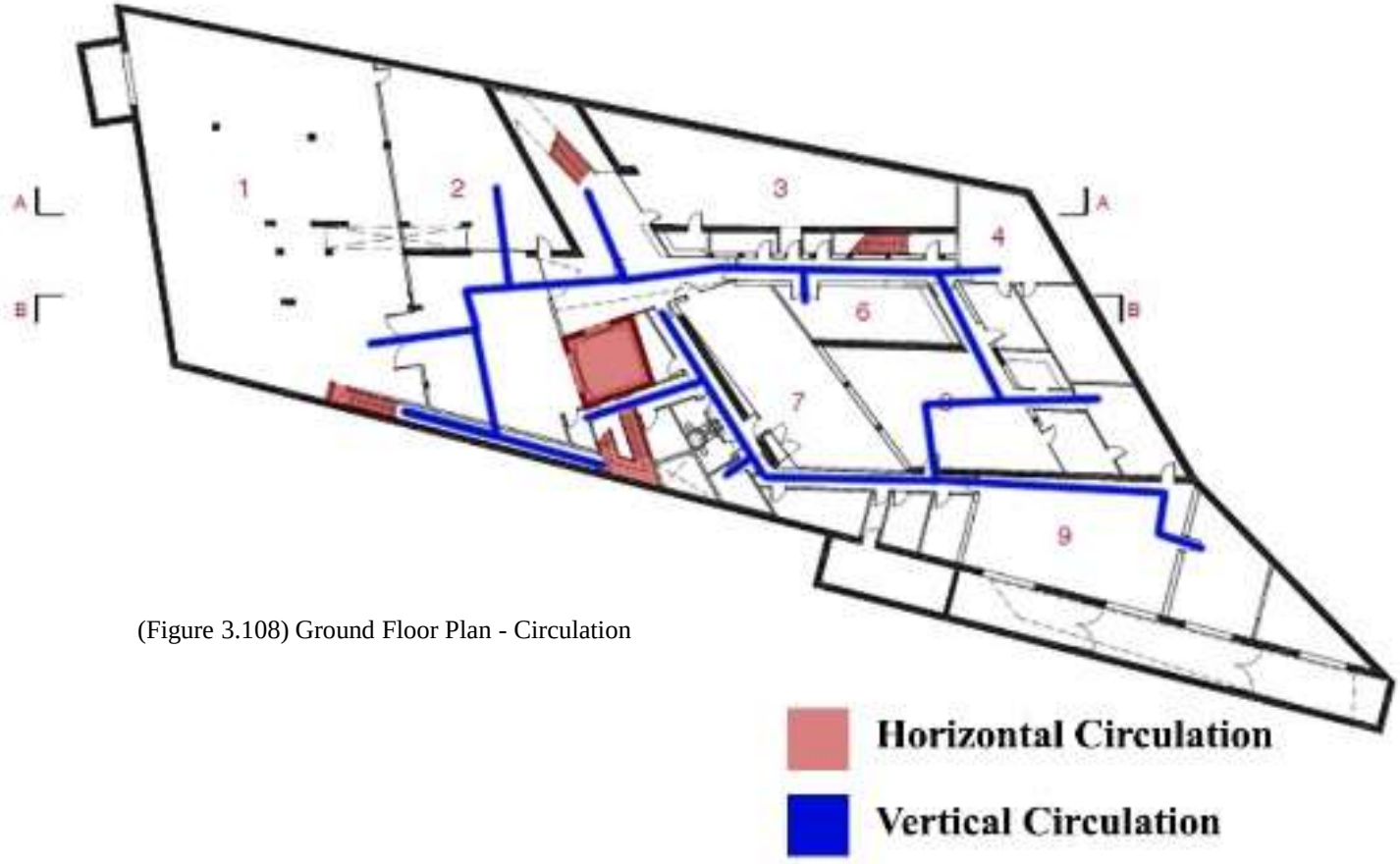
(Figure 3.106) Site Plan

Ground Floor Plan - Zoning



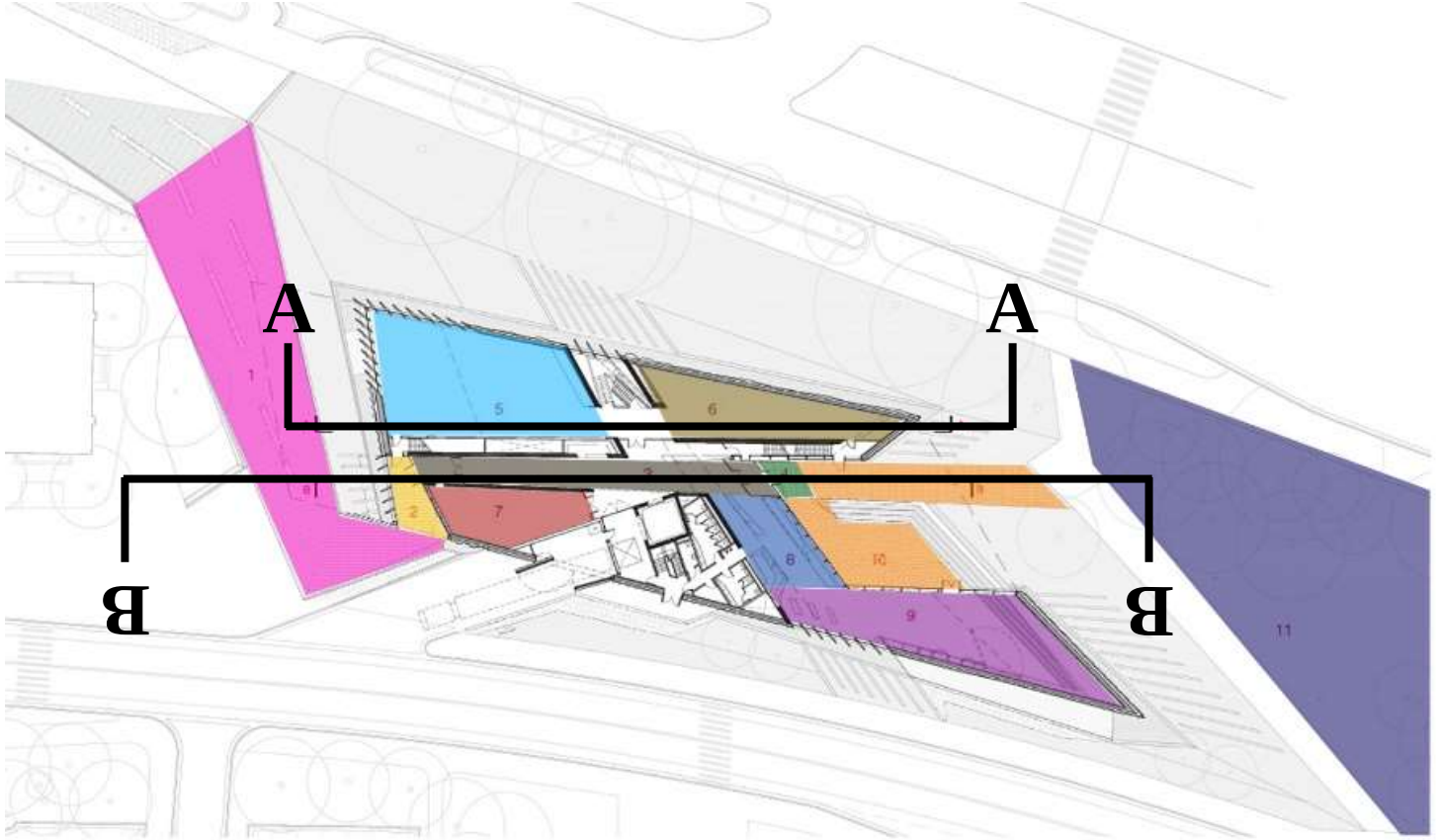
(Figure 3.107) Ground Floor Plan - Zoning

Ground Floor Plan - Circulation



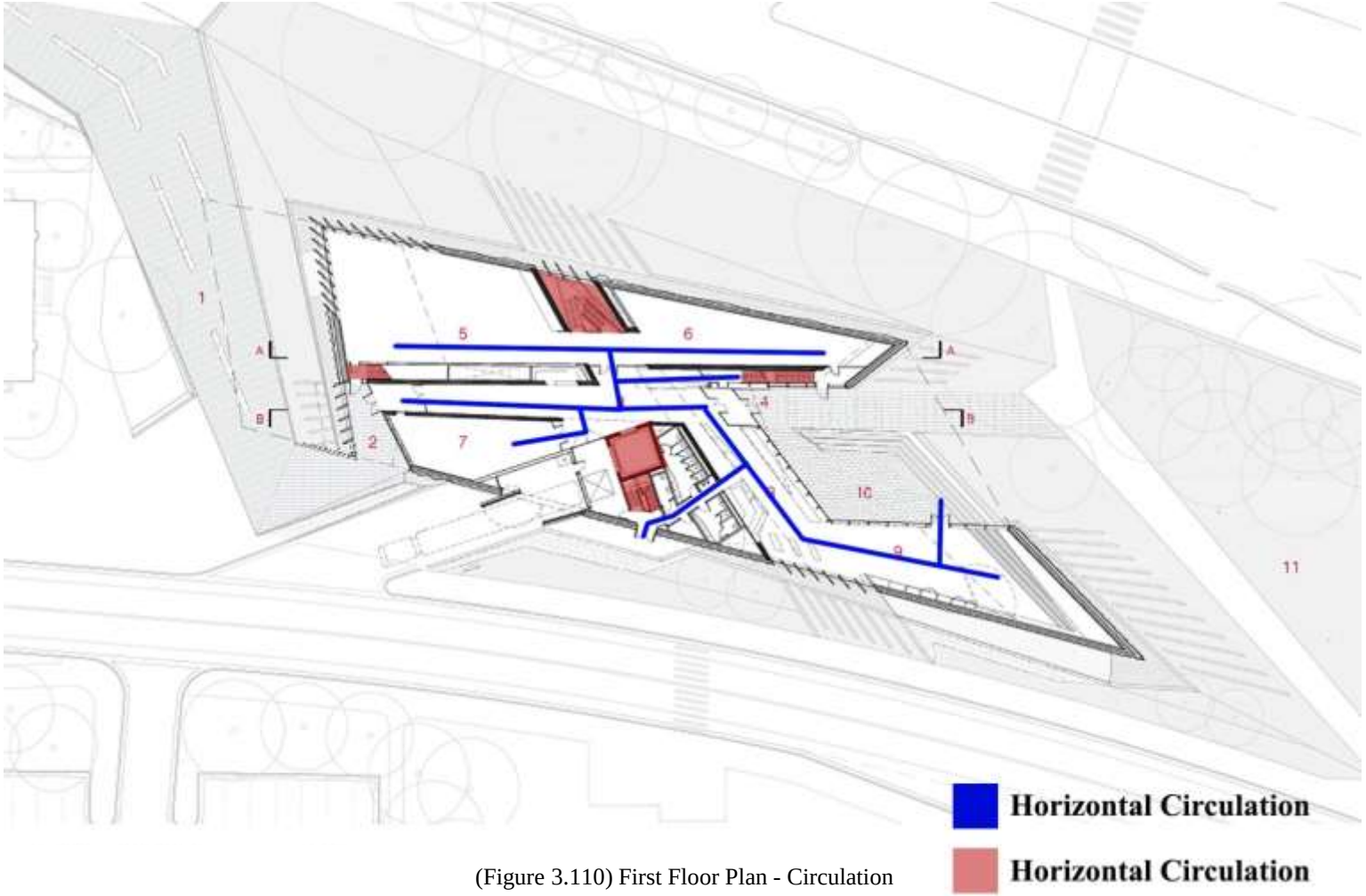
(Figure 3.108) Ground Floor Plan - Circulation

First Floor Plan - Zoning



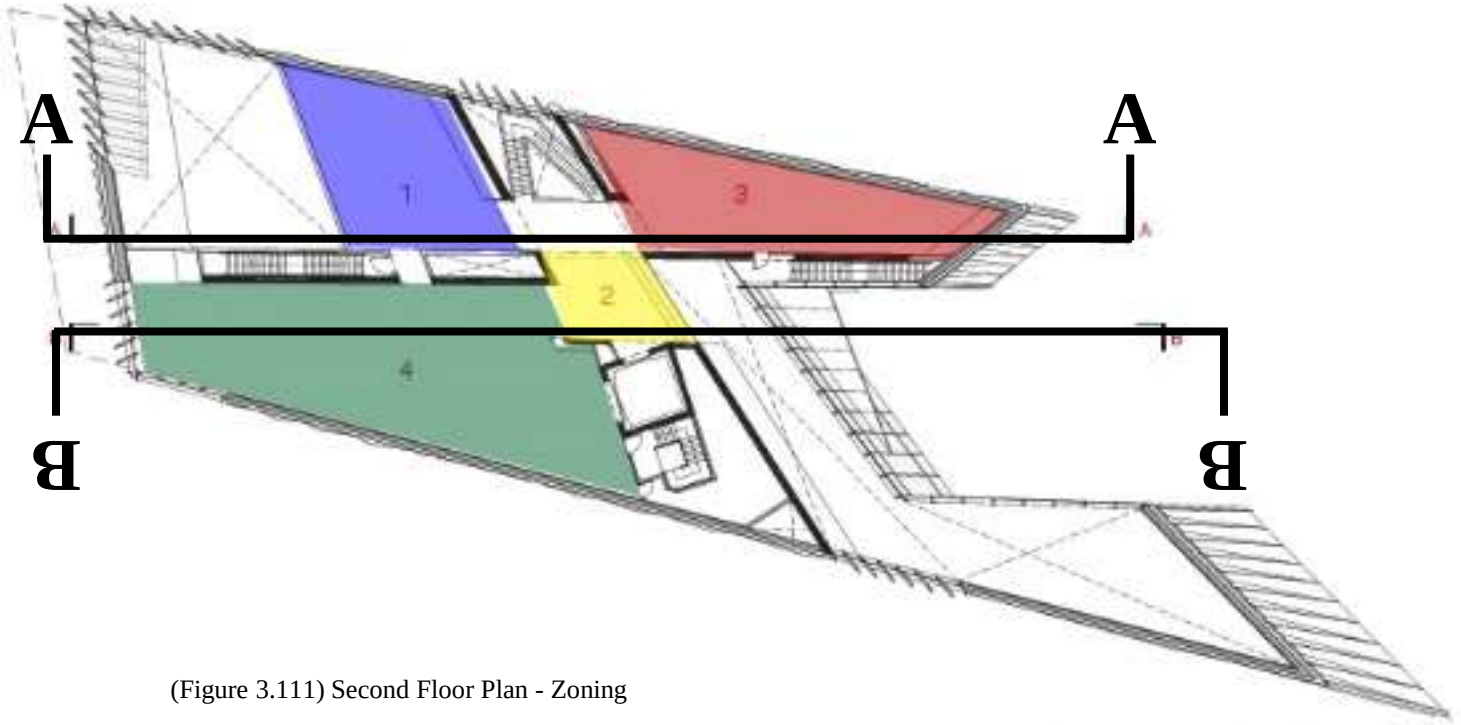
(Figure 3.109) First Floor Plan - Zoning

First Floor Plan - Circulation



(Figure 3.110) First Floor Plan - Circulation

Second Floor Plan - Zoning

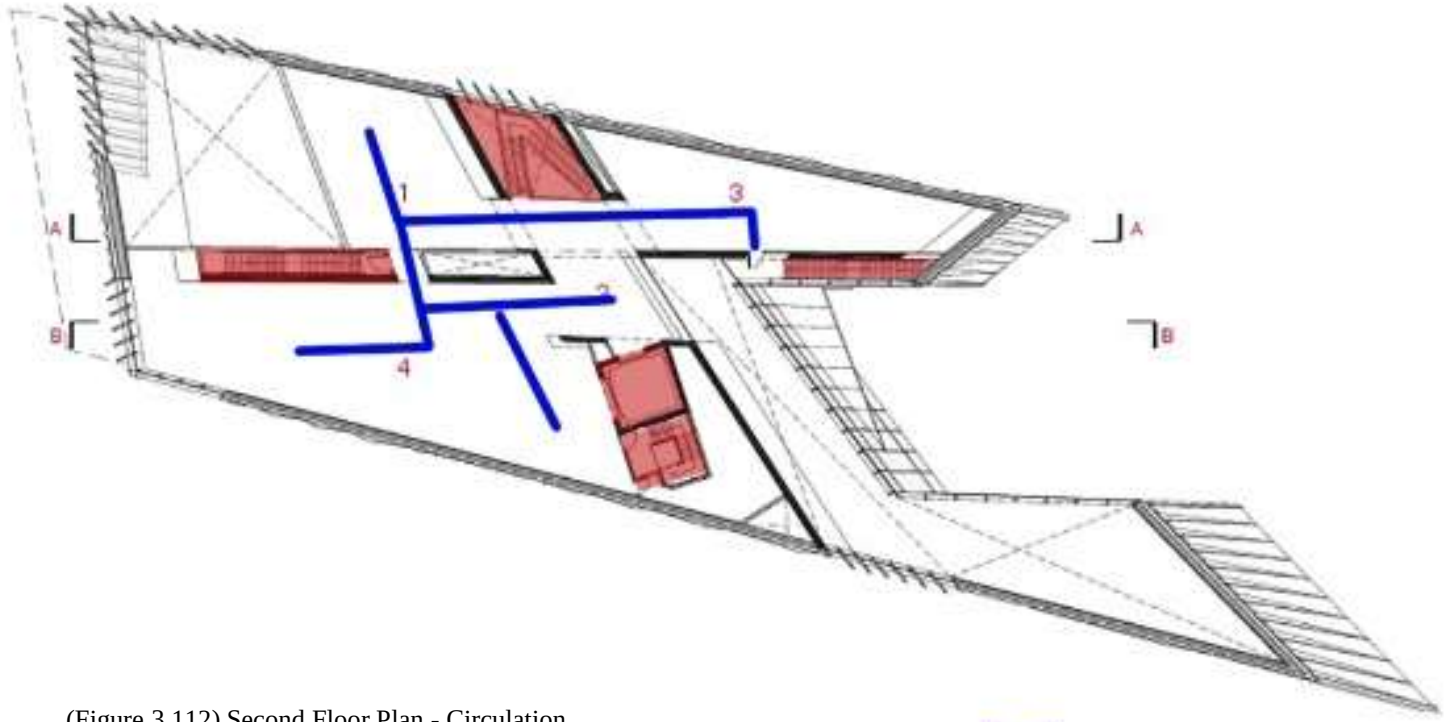


(Figure 3.111) Second Floor Plan - Zoning

Gallery Gallery

Lobby Gallery

Second Floor Plan - Circulation

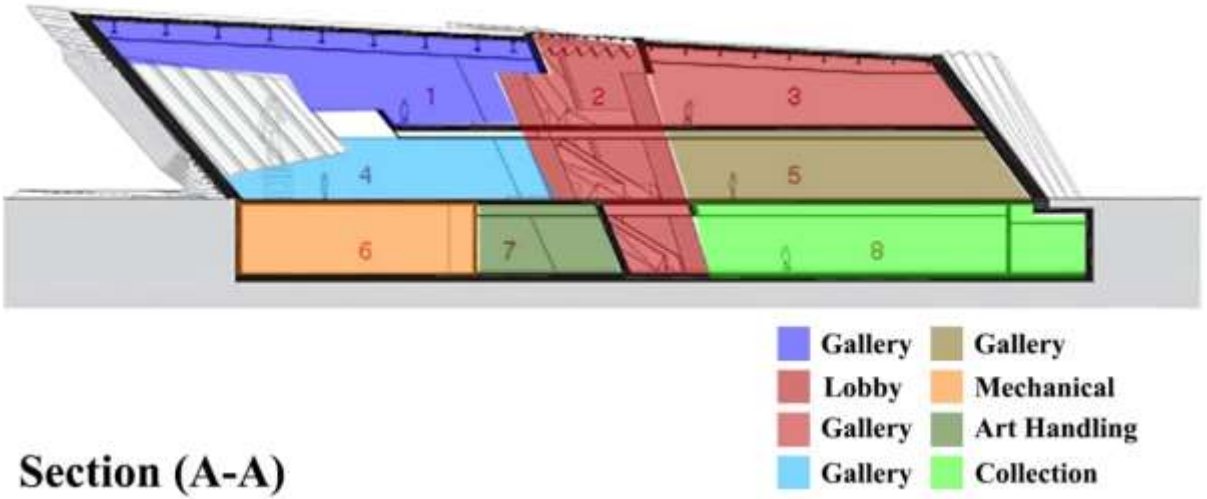


(Figure 3.112) Second Floor Plan - Circulation

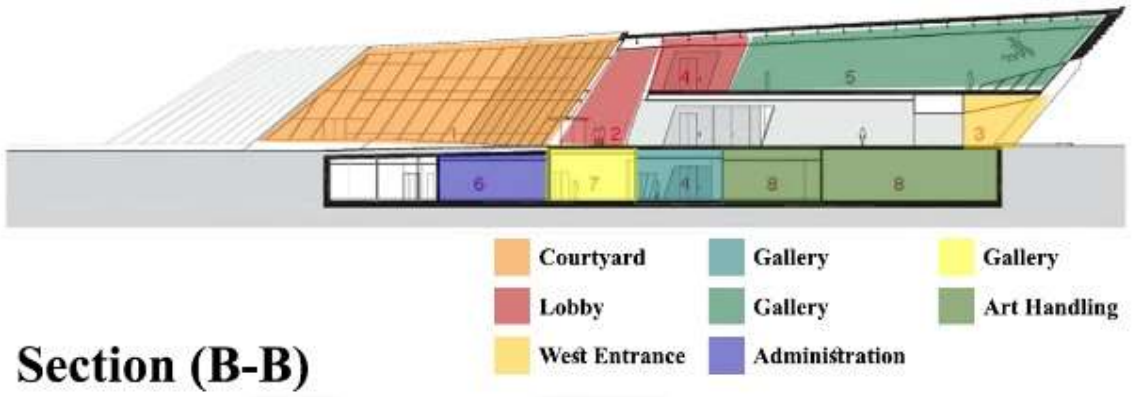
Horizontal Circulation

Vertical Circulation

Sections

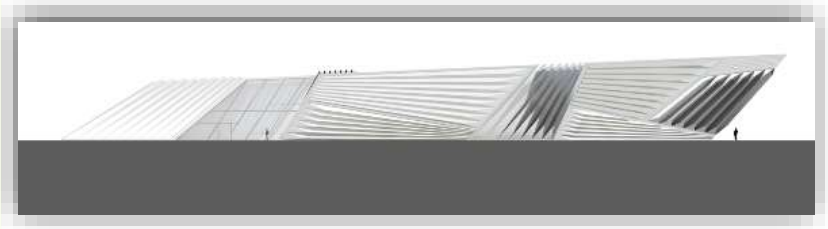


(Figure 3.113) Section (A-A)



(Figure 3.114) Section (B-B)

Elevations



(Figure 3.115) North Elevation

(Figure 3.116) South Elevation

(Figure 3.117) East Elevation

(Figure 3.118) West Elevation

Circulation

The circulation travelling in an east-west- direction on Grand River Avenue, along the main road of East Lansing and also on the main approach street to the campus produce an additional layer of connections that are applied to this highly frequented interface between city and campus.

(Figure 3.119) Interior View - Circulation

Components and Areas

(Table 3.13) Ground Floor Plan

Component	Area (Sqm)
Mechanical	127
Art Handling	36
Study Collection	36
Collections	13
Lobby	25
Gallery	14
Gallery	30
Administration	30
Electrical	35

Components and Areas

(Table 3.14) First Floor Plan

Component	Area (Sqm)
West Plaza	718
West Entrance	43
Lobby	160
East Entrance	20
Gallery	330
Gallery	180
Gallery	112
Café	110
Education	290
Courtyard	280
Sculpture Garden	1280

Components and Areas

(Table 3.15) Second Floor Plan

Component	Area (Sqm)
Gallery	175
Lobby	65
Gallery	200
Gallery	424

Advantages and Disadvantages of the Project

Advantages:

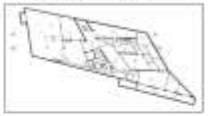
- Clear and Direct Building Mass
- Good reflection of the Projects topography and its Surrounding Landscape.

Disadvantages:

- Lack of some Cultural Activities in the Museum as (Theatre and Conference Hall)

3.7 Comparison between Similar Examples

(Table 3.16) Comparison between Similar Examples

	Similar Example 1 (MAXXI)	Similar Example 2 (DENVER)	Similar Example 3 (TAUBMAN)	Similar Example 4 (LOUVRE ABU DHABI)	Similar Example 5 (ELI & EDYTHE)
Location	Rome - Italy	Denver - USA	Virginia - USA	Abu Dhabi - UAE	USA
Site Plan	 Respecting Surrounding Urban Context				
Concept	Alignment of Architectural Elements with Surrounding Urban Grid 	The Peaks and Rock Crystal from the Nearby Mountains 	The Dramatical View of the Surrounding Mountainous Landscape 	Combination of Geometrical & Organic Shape to create Sense of Welcoming Area with Combination of Light & Shadow , Recall to History. 	Reflection of the Topography & Surrounding Landscape 
Plans	Curved & Smooth Lines to respect its Surrounding Context as well as Linear Lines in Some Parts 	Angular & Sharp Lines 	Angular & Sharp Lines 	Regular & Straight Lines as Seperate Parts 	Angular & Sharp Lines 
Structure & Material	• Reinforced Concrete • Steel Structure • Glass	• Steel and Concrete • Titanium and Granite • Glass	• Cement Fiber Panel • Limestone • Stainless Steel	• Floating Appearing Structure • Concrete • Metal • Aluminum	• Concrete • Stainless Steel
General 3D View					

(Table 3.17) Projects Components Availability Comparison

Components	MAXXI	DENVER	TAUBMAN	LOUVRE ABUDHABI	ELI & EDYTHE	My Project
Entrance	✓	✓	✓	✓	✓	✓
Reception	✓	✓	✓	✓	✓	✓
Temporary Exhibition	✓	✗	✓	✓	✗	✓
Permanent Exhibition	✓	✓	✓	✗	✓	✓
Auditorium	✓	✗	✓	✓	✗	✓
Shop	✓	✓	✗	✓	✗	✓

 **Available**  **Not Available**

(Table 3.17) Projects Components Availability Comparison (Continued)

Components	MAXXI	DENVER	TAUBMAN	LOUVRE ABUDHABI	ELI & EDYTHE	My Project
Café	✓	✓	✓	✓	✓	✓
Administration	✓	✓	✓	✓	✓	✓
Storage	✓	✓	✓	✓	✓	✓
Unpacking	✓	✓	✓	✓	✓	✓
Mechanical	✓	✓	✓	✓	✓	✓
Office	✓	✓	✓	✓	✓	✓

 **Available**

 **Not Available**

(Table 3.17) Projects Components Availability Comparison (Continued)

Components	MAXXI	DENVER	TAUBMAN	LOUVRE ABUDHABI	ELI & EDYTHE	My Project
WC	✓	✓	✓	✓	✓	✓
Lobby	✓	✓	✓	✓	✓	✓
Service	✓	✓	✓	✓	✓	✓
Kitchen	✓	✓	✓	✓	✓	✓
Special Exhibition	✗	✓	✗	✗	✗	✗
Atrium	✗	✓	✗	✗	✗	✗

✓ **Available** ✗ **Not Available**

(Table 3.17) Projects Components Availability Comparison (Continued)

Components	MAXXI	DENVER	TAUBMAN	LOUVRE ABUDHABI	ELI & EDYTHE	My Project
Outdoor Sculpture Deck	✗	✓	✗	✗	✓	✗
Theatre	✗	✗	✓	✗	✗	✗
Studio for Artists	✗	✗	✓	✗	✗	✓
Gallery	✗	✗	✓	✓	✓	✓
Electrical	✓	✓	✓	✓	✓	✓
Multi Purpose Hall	✓	✓	✓	✗	✗	✓

✓ **Available** ✗ **Not Available**

(Table 3.17) Projects Components Availability Comparison (Continued)

Components	MAXXI	DENVER	TAUBMAN	LOUVRE ABUDHABI	ELI & EDYTHE	My Project
Art Corridor	✗	✗	✓	✗	✗	✓
Seminar Hall	✗	✗	✓	✗	✗	✓
Library	✗	✗	✓	✗	✗	✓
Children Museum	✗	✗	✗	✓	✗	✗
Restaurant	✗	✗	✗	✓	✗	✗

Note: There are Some Components that are available in less than 3 Similar Examples , but Still Put in my Project because it is a need and they are necessary Components for my project , such as (Library, Seminar Hall, Studio for Artists & Art Corridor)

✓ **Available** ✗ **Not Available**

NEXT…

PROJECT COMPONENTS AND FUNCTIONAL RELATIONSHIPS

4.1 Introduction

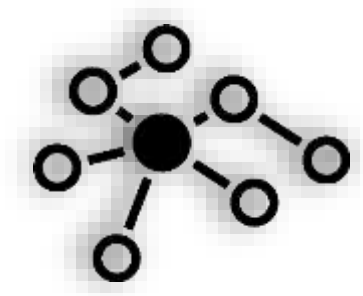
In this Chapter, the main Components and Functions will be discussed as well as the functional relations of the components with each other and how they are linked together.

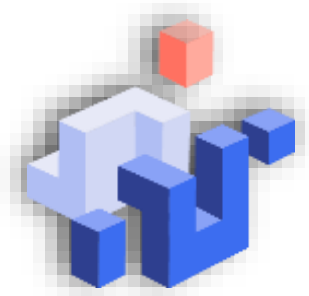
4.2 Project Components

Components of the Project

Exhibition Halls	Cultural	Social	Services	Administration
• Permanent Exhibition Halls • Temporary Exhibition Halls • Galleries	• Auditorium • Library • Seminar Hall • Multi Purpose Hall • Studio for Artists	• Cafeteria • Kitchen • Shops	• Electrical Services • Mechanical Services	

(Diagram 4.1) Components of the Project





Components of Entrance

- Lobby
- Waiting Area
- Information (Ticket)
- Service
- WC

Components of Administration

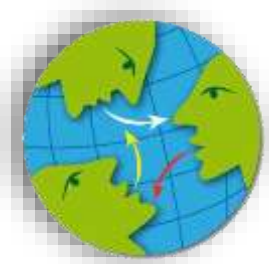
- Entrance (Waiting)
- Manager Room
- Assistant Room
- Meeting Room
- Achieve
- WC

Components of Exhibitions

- Permanent Exhibition Halls
- Temporary Exhibition Hall
- Galleries
- WC

Components of Cultural Part

- Auditorium
- Library
- Seminar Hall
- Multi Purpose Hall
- Studio for Artists

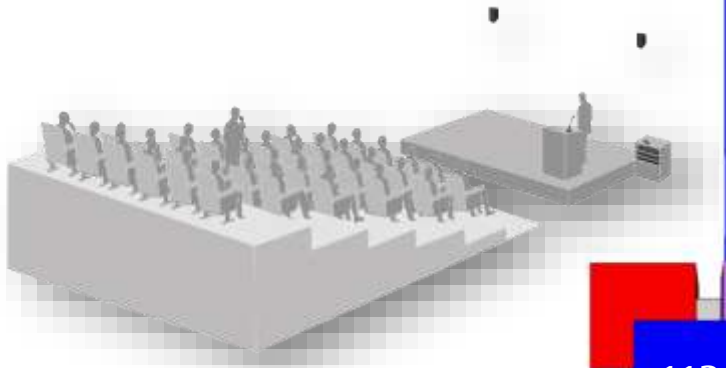


Components of Library

- Reading Hall
- Book Store
- Administration Office
- Slide Room
- Achieve
- Printing and Copy
- WC

Components of Auditorium

- Auditorium
- Stage
- Manager Office
- Dressing Room
- Makeup Room
- Service
- WC and Bath
- WC for Visitors

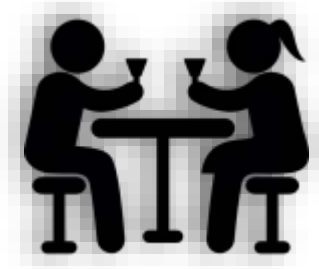


Components of Seminar Hall

- Lobby
- Hall
- Projector
- Service
- Storage
- WC

Components of Social Part (Cafeteria)

- Dining Hall
- Kitchen
- Storage
- WC
- Wastes

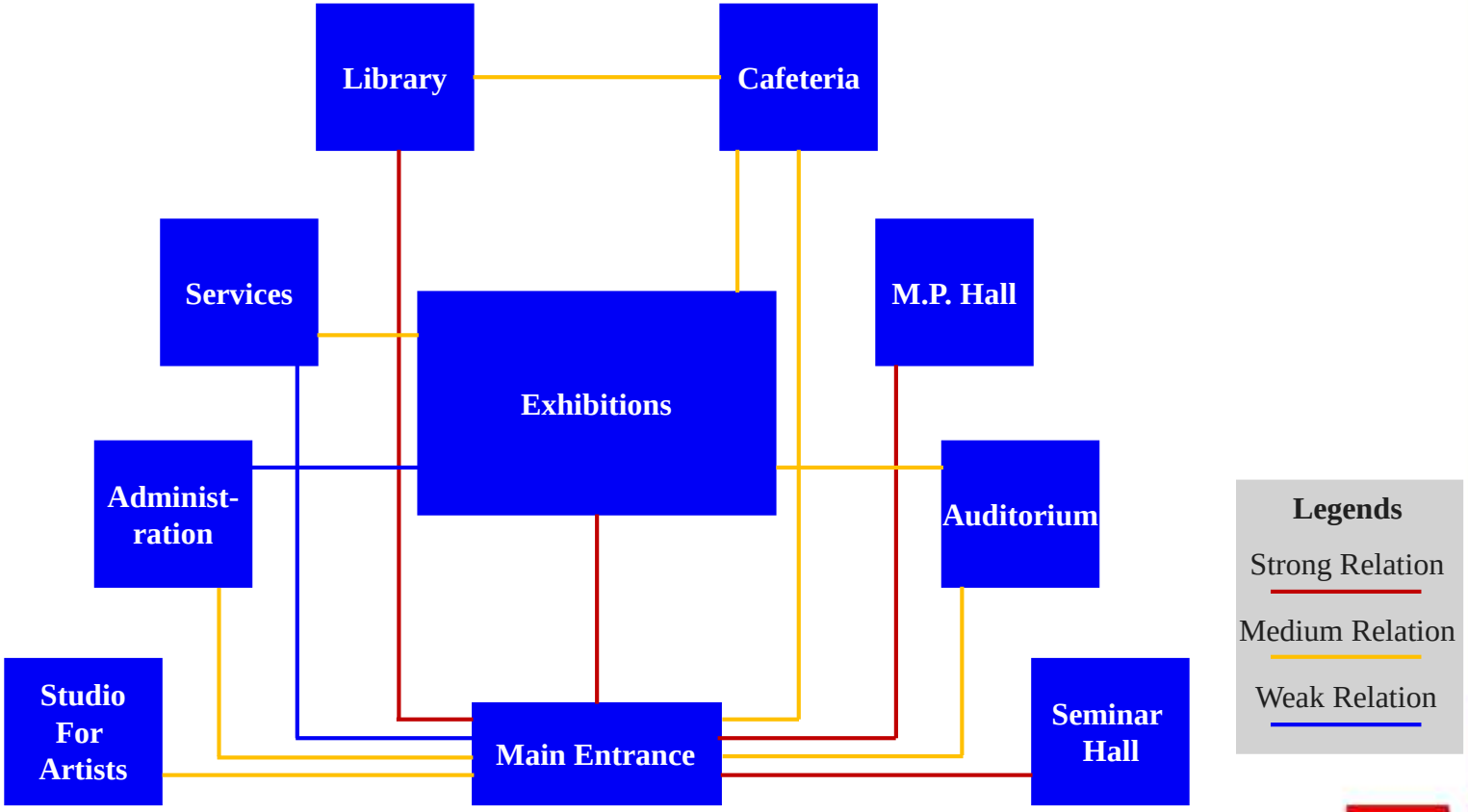


Components of Services

- Engineering Room
- Electrical Room
- Air-conditioning Room
- Store
- WC
- Maintenance

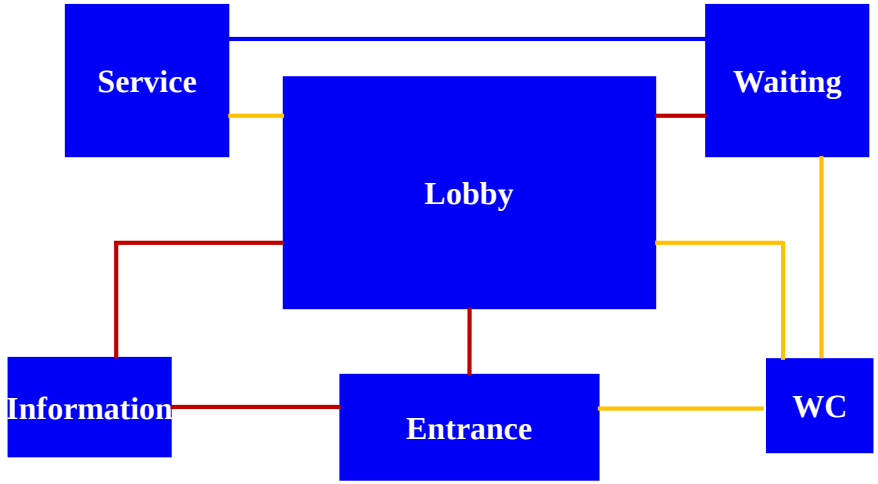
4.3 Functional Relationships

Functional Relationship of the Project



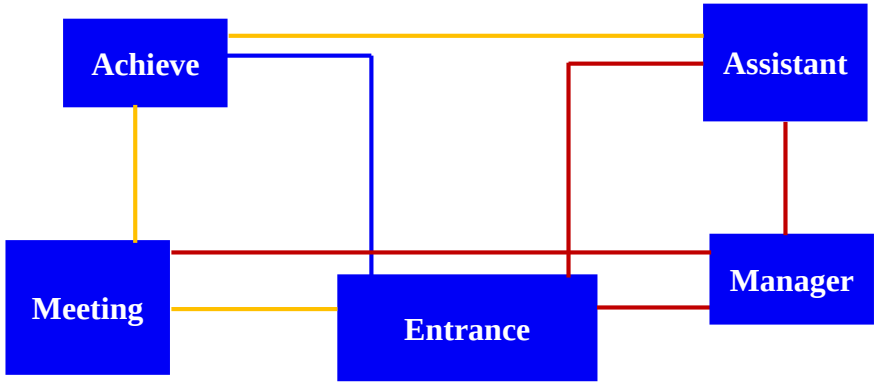
(Diagram 4.2) Functional Relationship of the Project

Functional Relationship of Entrance



(Diagram 4.3) Functional Relationship of Entrance

Functional Relationship of Administration



Legends

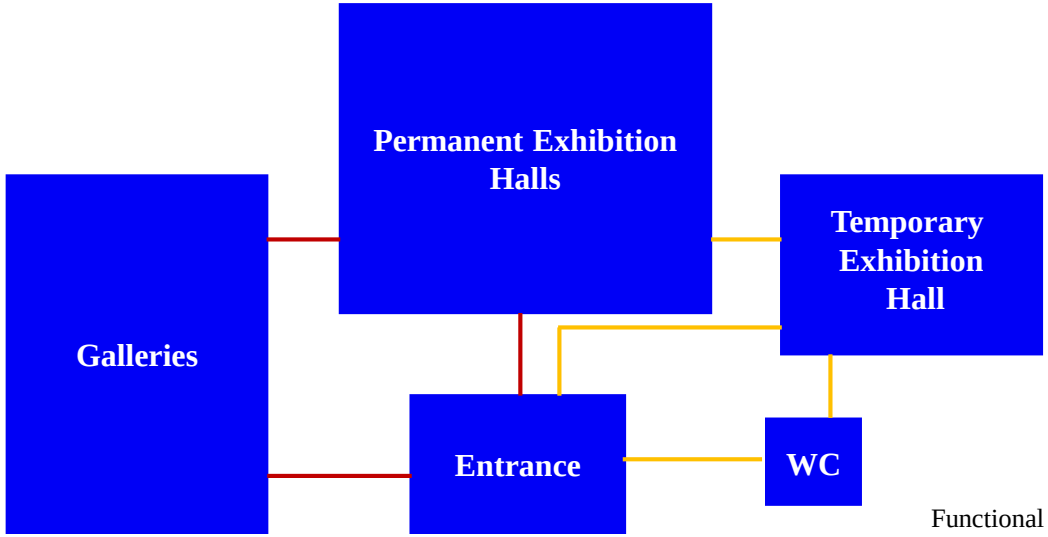
Strong Relation

Medium Relation

Weak Relation

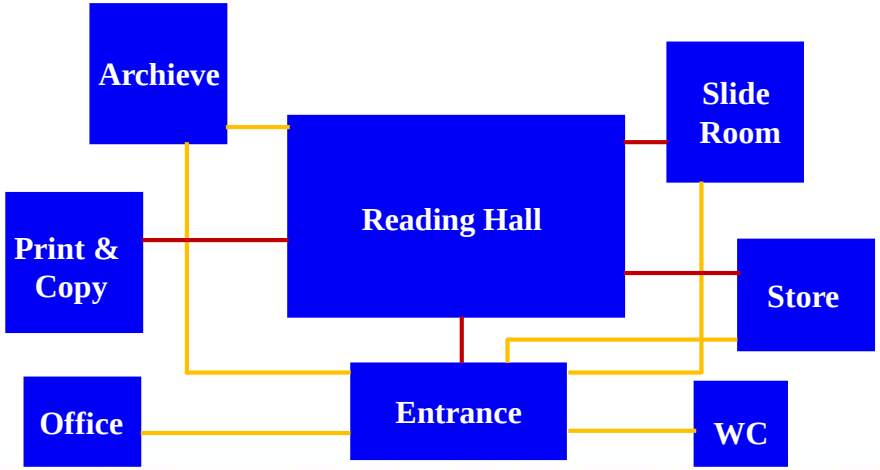
(Diagram 4.4) Functional Relationship of Administration

Functional Relationship of Exhibitions



(Diagram 4.5)
Functional Relationship of Exhibitions

Functional Relationship of Library



Legends

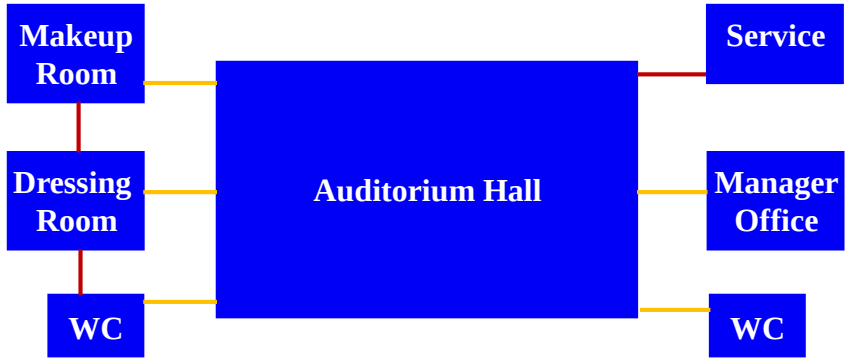
Strong Relation

Medium Relation

Weak Relation

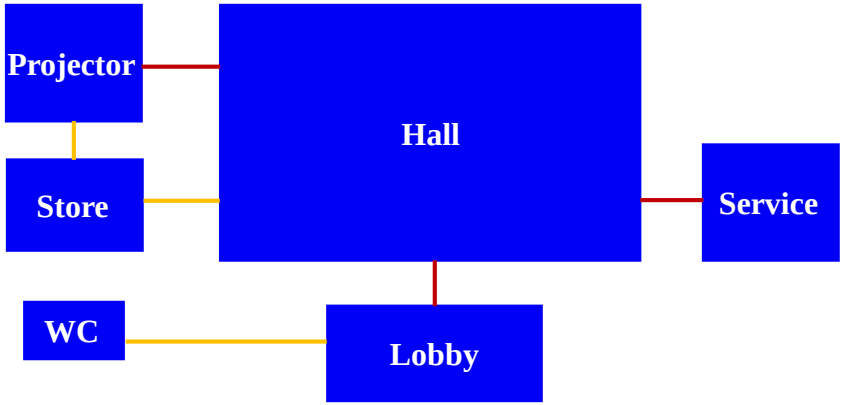
(Diagram 4.6)
Functional Relationship of Library

Functional Relationship of Auditorium



(Diagram 4.7) Functional Relationship of Auditorium

Functional Relationship of Seminar Hall



Legends

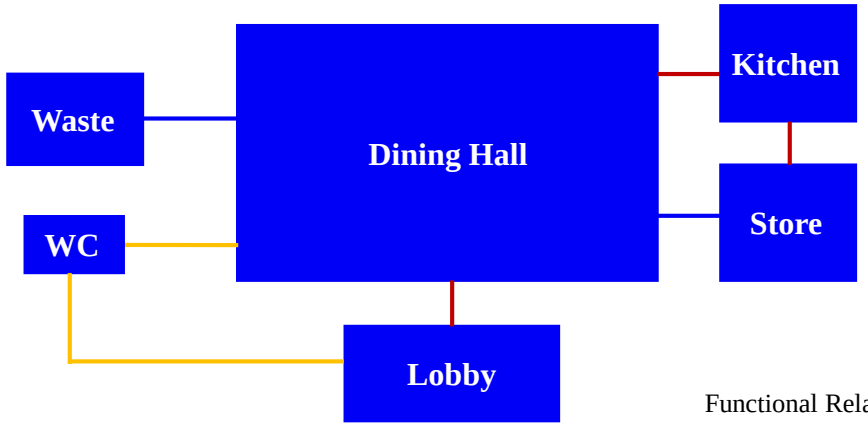
Strong Relation

Medium Relation

Weak Relation

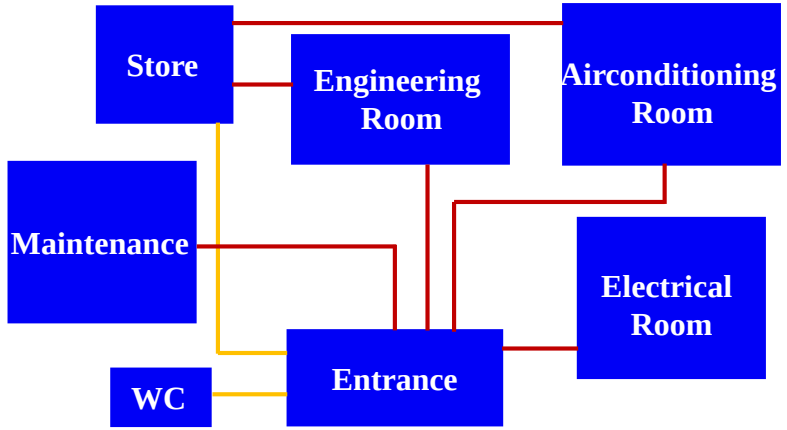
(Diagram 4.8) Functional Relationship of Seminar Hall

Functional Relationship of Social Service (Cafeteria)



(Diagram 4.9)
Functional Relationship of Social Services (Cafeteria)

Functional Relationship of Services



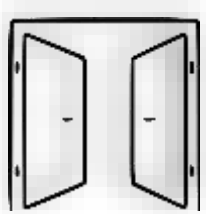
(Diagram 4.10) Functional Relationship of Services

4.4 Standards

Entrances in Museums

- Although Entrances are very important in Museum Project, but still we have to control the number of Entrances in the Project and try to use the least number of Entrances as much as possible for the aim of simplifying the design.
- There must be a Main Entrance leading directly to information and Reception.
- Main Entrance should be designed in such a way that can attract Visitors and People.
- Size of Entrance should be designed considering as Great Exhibitions Days when there are lots of Visitors.

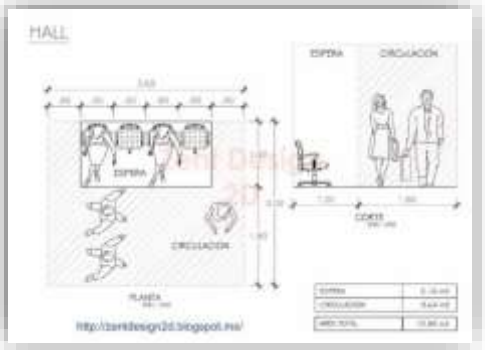
Museums should have Four Types of Entrances



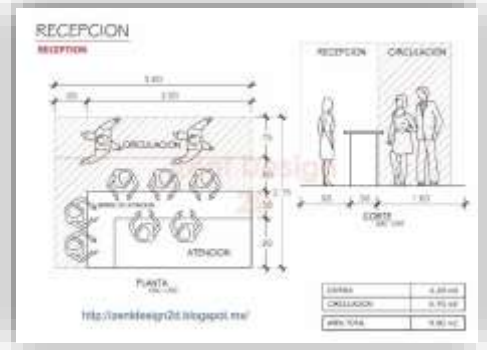
- Main Entrance
- Secondary Entrance
- Staff Entrance
- Service Entrance

Standards of (Boardroom, Waiting Hall and Reception)

(Figure 4.1) Boardroom Standard



(Figure 4.2) Waiting Hall Standard



(Figure 4.3) Reception Standard

Exhibitions

Exhibition: is the display and presentation of a group of Valuable Items.

Exhibition Hall: is a large Hall for keeping and displaying Items.

Exhibitions may be Permanent or Temporary, but in general, Exhibitions are considered to be Temporary as they will be displayed at specified time and locations.

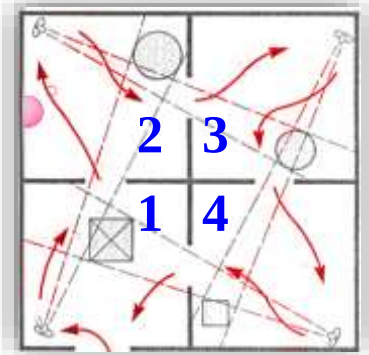
Art Exhibition: it is the Space that holds and keeps Artifacts and displays them to the Audience.

These Exhibitions may display (Pictures , Videos , Drawings , Performance , Interactive Arts or Collections of Specific Arts)

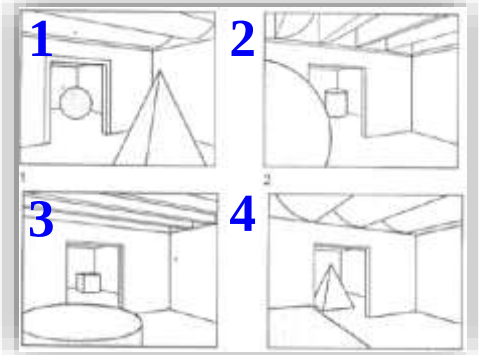
Design of Displays

The Exhibition Spaces should be organized in a way that can attract audience as much as possible. Designing of Museum Exhibitions needs hard work and effort to get good Design Results.

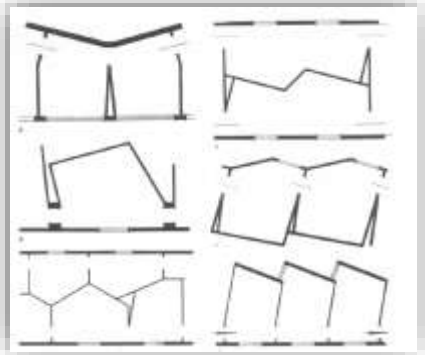
Movement and Different ways of Dividing Exhibition Spaces



(Figure 4.4)
Movement within Exhibition - Plan

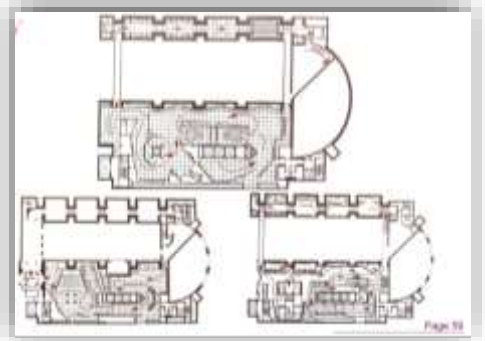


(Figure 4.5)
Movement within Exhibition – 3D



(Figure 4.6)
Different ways of Dividing Exhibition Spaces

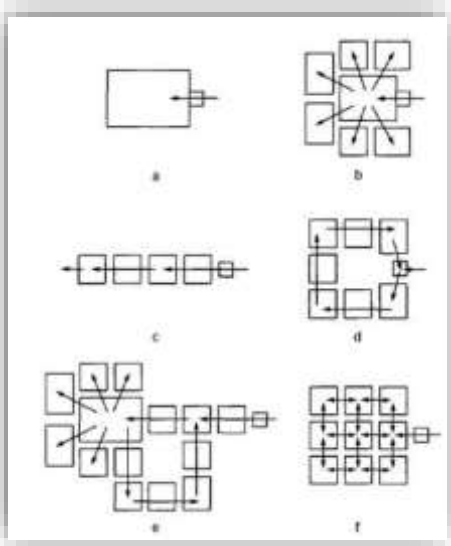
Example of Inside Movement in Exhibition



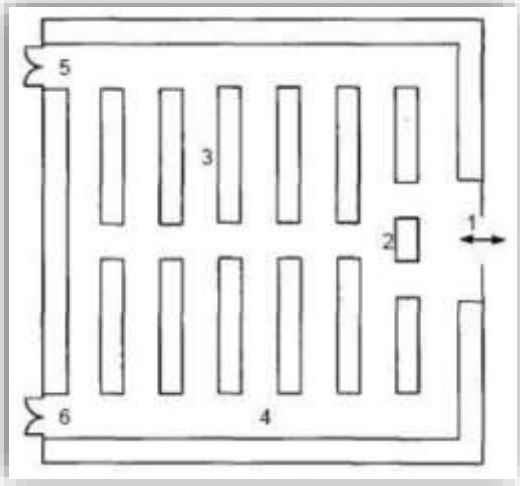
(Figure 4.7) Inside Movements of Exhibitions

Exhibition Details

a. Open Plan **b.** Core + Satellites
c. Linear Procession
d. Loop **e.** Complex **f.** Labyrinth



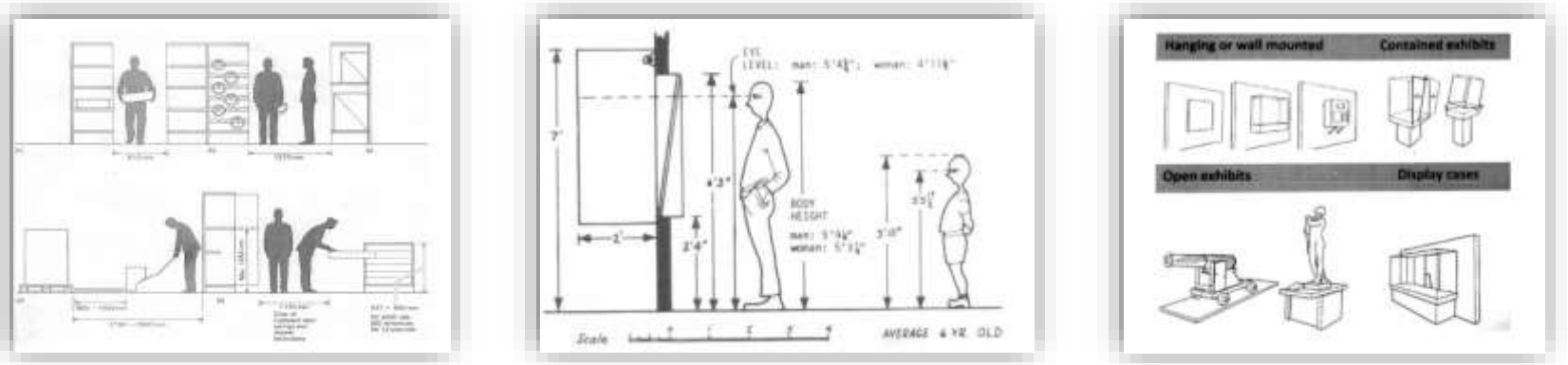
(Figure 4.8)
Genetic Plans for Exhibit and open access storage areas



1. Entrance from main exhibit areas
2. Orientation point
3. Ranks of cases glazed on all sides
4. Full height wall cases
5. Fire exit
6. Controlled access to Staff Areas and secure storage

(Figure 4.9)
Method of Layout in open access storage areas

Some Exhibits are designed to be Permanent Fixtures in a Museum, While others are only Temporary. Some may be designed to allow hands on interaction, while others must be away from visitors hands.

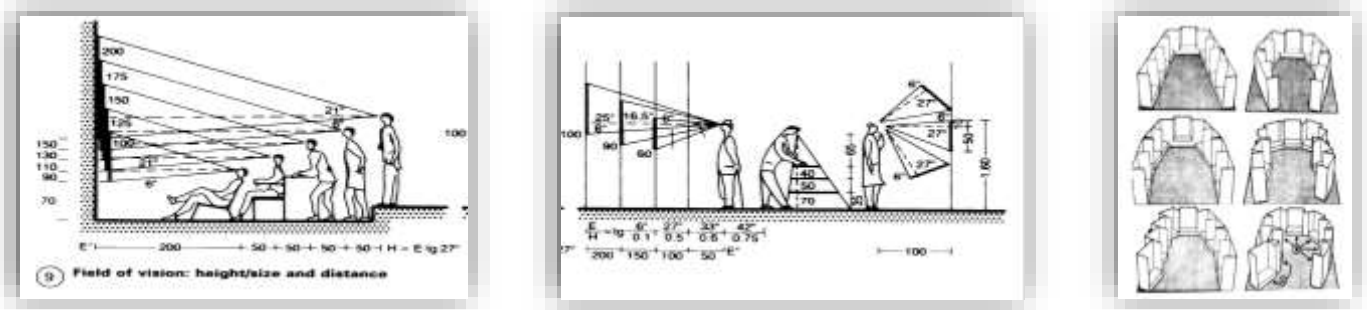


(Figure 4.10) Measurements of Adult and Six Year Old Visitors in Relation to Cases

Types of Display

If the cases are arranged with gently curving lines to take advantage of this pattern of movement visitors will find the room more attractive and can progress easily with the line of the case.

People who visit The Museum are Normal People which are between non mature and mature people. Normal human angle of vision starts at 27° up from eye level. For a standing viewer, this means that well-lit pictures should be hung 10m away with the top not more than 4.90m above eye level and the bottom about 70 cm below.



(Figure 4.11) Field of Vision

Library

Libraries have many classifications such as education libraries or public libraries, but in general, all of them are created for the purpose of providing free public access to reading materials, in order to educate people and enlighten their ways.
A library is a collection of sources of information and similar resources, made accessible to a defined community for reference or borrowing. It provides physical or digital access to material, and may be a physical building or room, or a virtual space, or both of them.

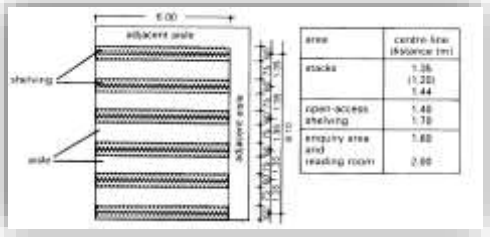
Library Shelves

structural grid	7.20 m × 7.20 m	7.50 m × 7.50 m	7.80 m × 7.80 m	8.40 m × 8.40 m
n × centre-line distance	6 × 1.20	6 × 1.25	6 × 1.30	6 × 1.20
	5 × 1.44	5 × 1.50	5 × 1.56	5 × 1.40
	4 × 1.80	4 × 1.87	4 × 1.95	4 × 1.68

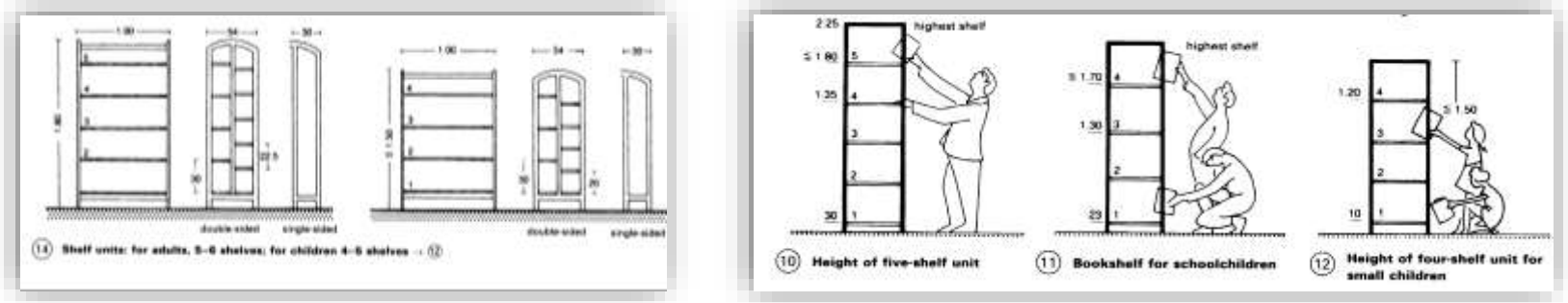
(Figure 4.12)
Example Distances between Shelf Unit – Center Line – Common Grids

area	volumes per shelf
stacks	25–30
open-access shelving	20–25
enquiry area and reading room	20

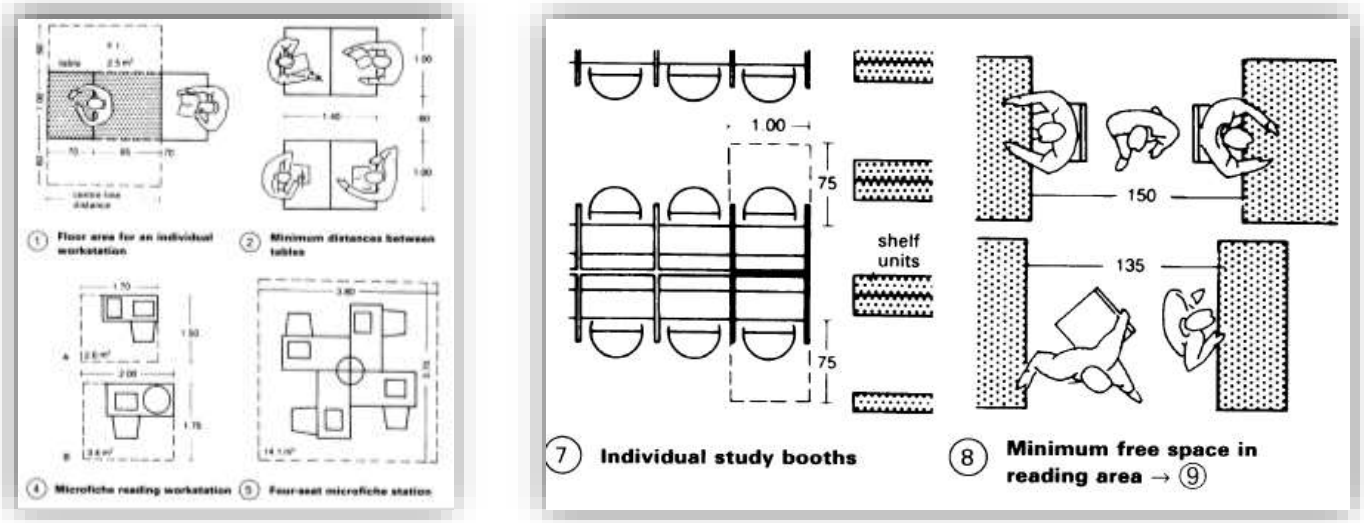
(Figure 4.13)
Volumes per Shelf



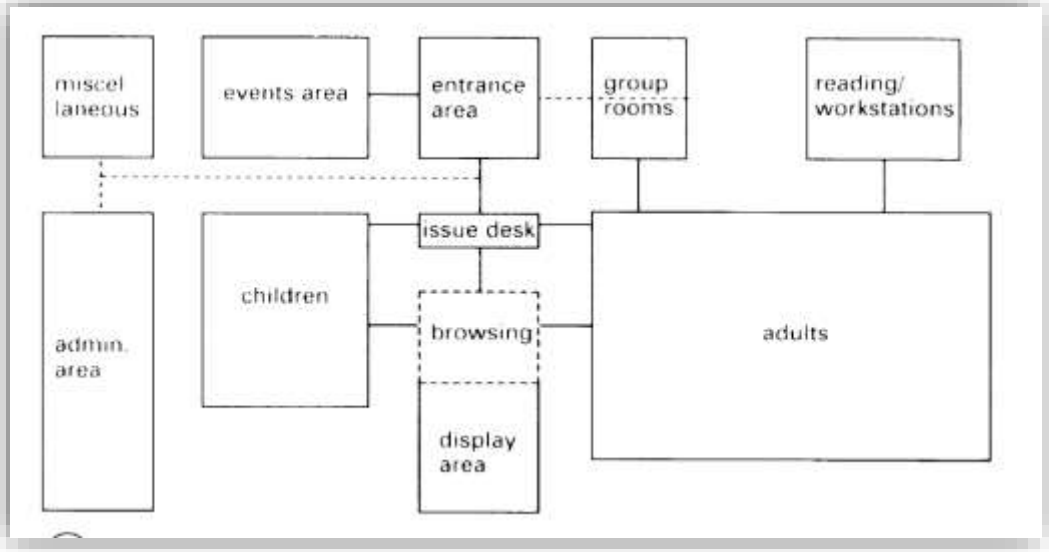
(Figure 4.14)
Floor Area for Open Access Bookshelves
8.70 * 6.00 m per Block of Shelf Unit



(Figure 4.15) Library Shelf Standards



(Figure 4.16) Table and Space Dimensions of Library



(Figure 4.17) Functional Diagram of Medium Sized Library

Auditorium

Auditorium is the part of a public building where an audience sits, as distinct from the stage, the area on which the performance or other object of the audience's attention is presented. In a large theatre an auditorium includes a number of floor levels frequently designed as stalls, private boxes, dress circle, balcony or upper circle, and gallery. A sloping floor allows the seats to be arranged to give a clear view of the stage. The walls and ceiling usually contain concealed light and sound equipment and air extracts or inlets and may be highly decorated.

Auditorium Stage

Seating Capacity: The maximum capacity of an auditorium depends on the format selected, and on Aural and Visual limitations set by the type of production. Other factors include (levels, sightlines, acoustics, circulation and seating density, as well as size and shape of platform/stage).

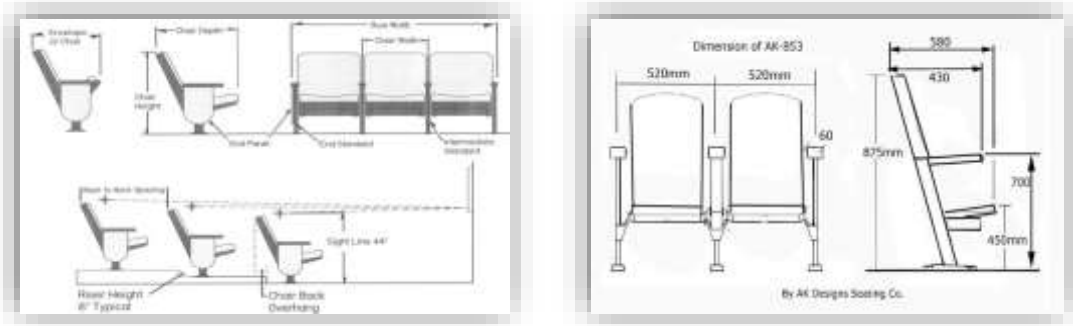
Size of Auditorium: An area of at least 0.5 sqm per spectator is to be used for sitting spectators. This number is derived from a seat width x row spacing of at least 0.45 sqm per seat, plus an additional minimum of 0.5m x 0.9 m. approximately 0.05 sqm per seat

Length of Rows: A maximum of 16 seats per aisle

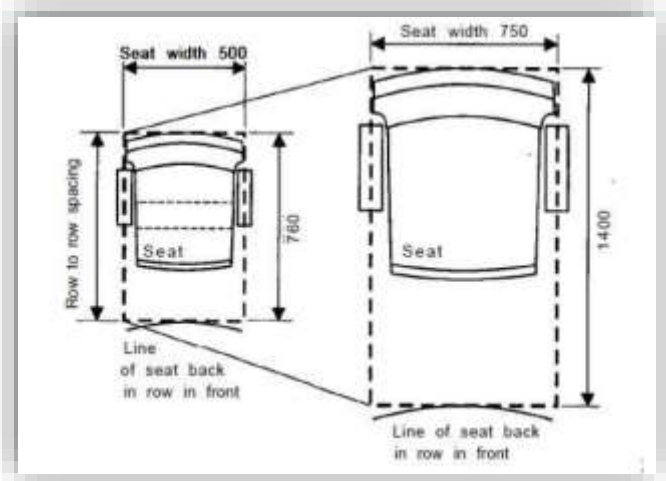
Escape Routes: 1m wide per 150 people (min. width 0.8 m)

Volume of Room: This is obtained on the basis of acoustic requirements.

4-5 m3/spectator; opera approx. 6-8 m3/spectator of air volume. For technical ventilation reasons, the volumes should be no less than these figures so as to avoid air changes which are too pronounced.



(Figure 4.18) Auditorium Seat Details

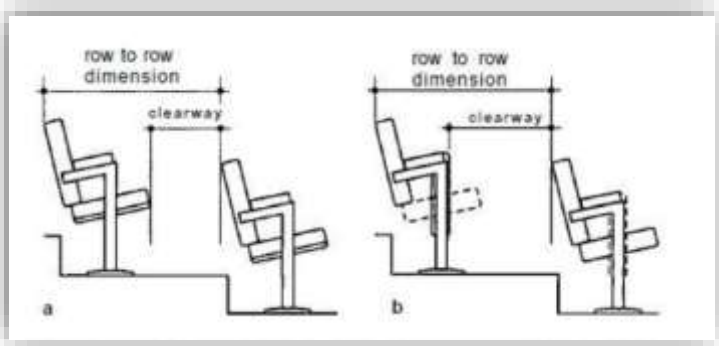


(Figure 4.19) Seating Density

Seating Rows Spacing

Spacing is controlled by the clearway between the leading edge of the seat (in an upright position, if tippable) and the rear of the back of the seat in front,. For traditional seating the minimum clearway for people to pass along the row is 300 mm and this dimension increases with the number of seats in a row. For continental seating the clearway is not less than 400 mm and not more than 500 mm. Legislation also dictates the minimum row-to row dimension at 760 mm: this is usually not adequate and the minimum should be 850 mm for traditional seating.

(Figure 4.20)
Seating Rows Spacing

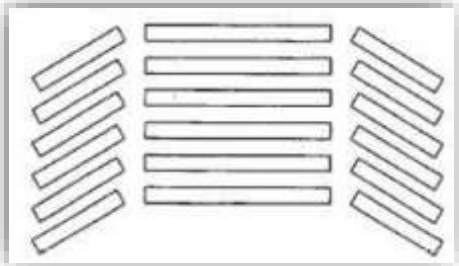


a. Row to Row Dimension and Clearway with Fixed Seating

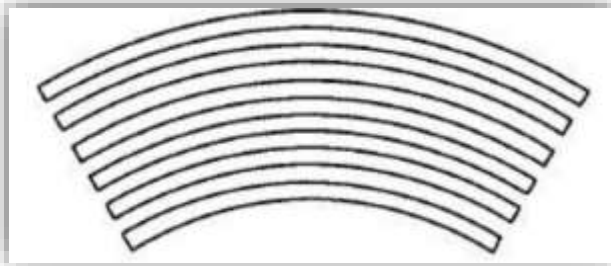
b. Row to Row Dimension and Clearway With tipped up Seating

Auditorium Seating Arrangements

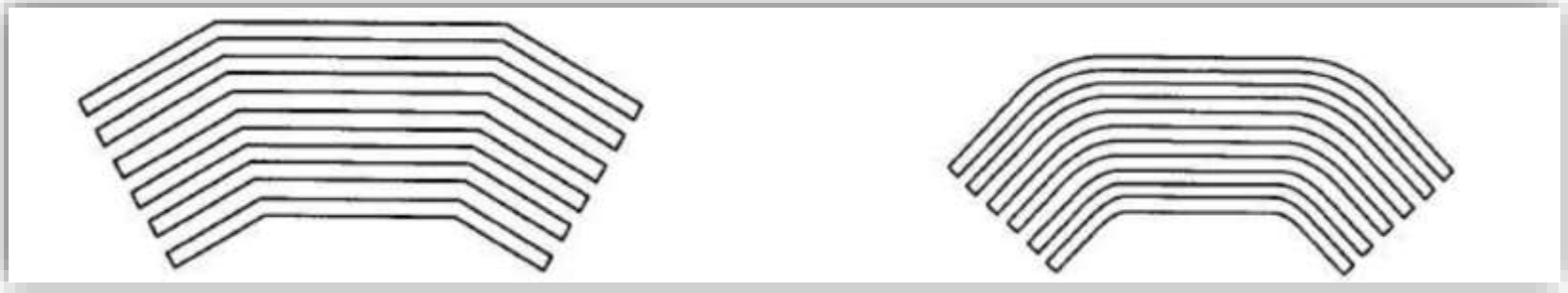
(Figure 4.21)
Straight Rows on Flat or Sloping Floor



(Figure 4.22) Straight Rows with Separate Angled side Block on Flat or Sloping Floor

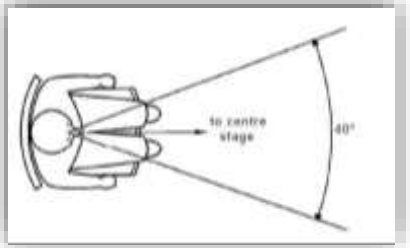


(Figure 4.23)
Curved Rows on Flat or Sloping Floor

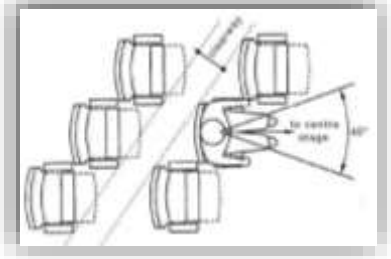


(Figure 4.24)
Straight and Angled rows on Flat or Sloping Floor

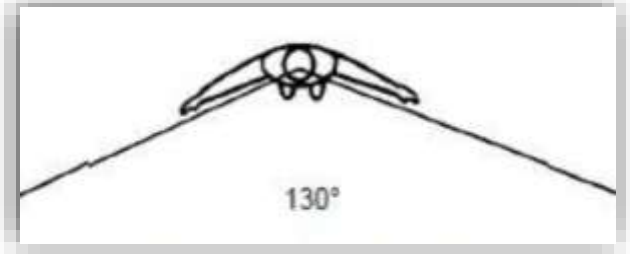
(Figure 4.25)
As previous but with Curves at change of Angle



(Figure 4.26)
The Angle of Horizontal Vision for a Stationery Head is 40



(Figure 4.27)
Where Head Angle Exceed 300, Seats may be angled within Row



(Figure 4.28)
Horizontal Sightline of the Performer

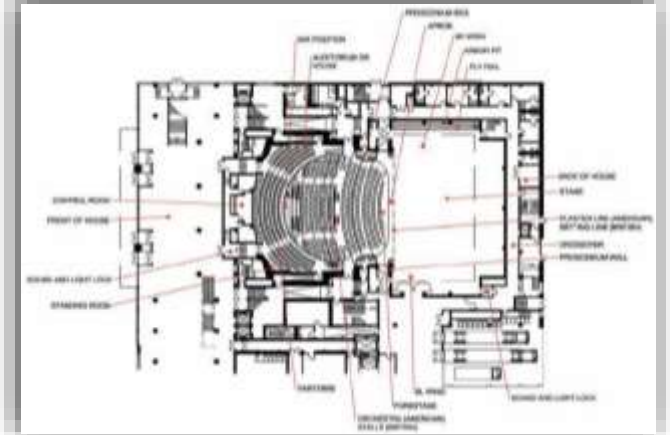
Stage

Table III Widths of proscenium opening in metres for various types of performance

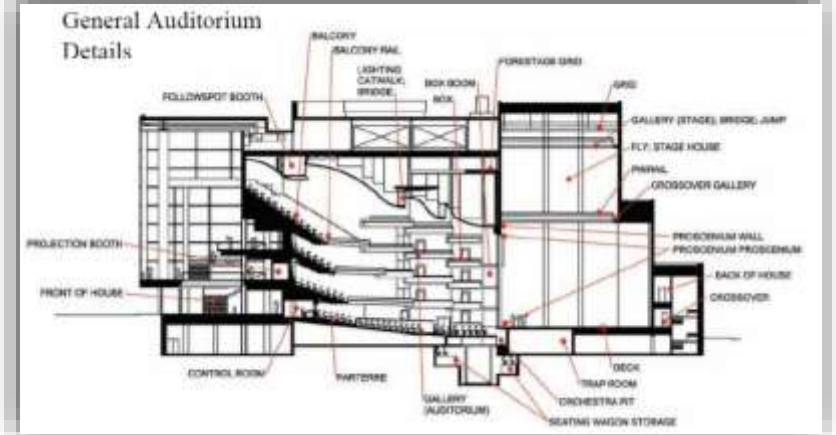
	Small scale	Medium scale	Large scale
Drama	8	10	10
Opera	12	15	20
Dance	10	12	15
Musical	10	12	15
All-purpose	12	15	20

(Figure 4.29) Stage Width

General Example of Auditorium

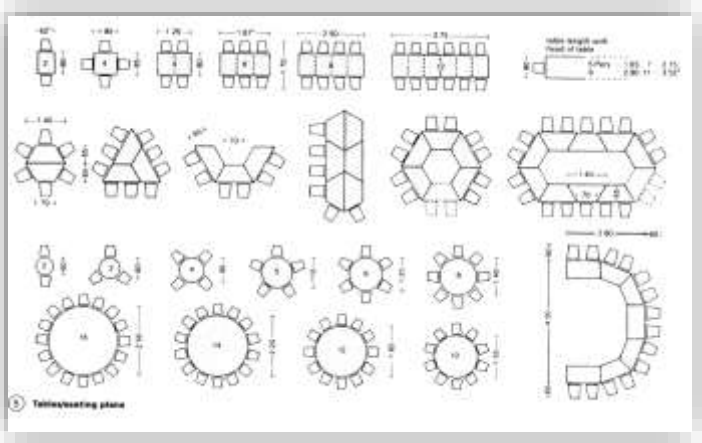


(Figure 4.30) General Plan of Auditorium

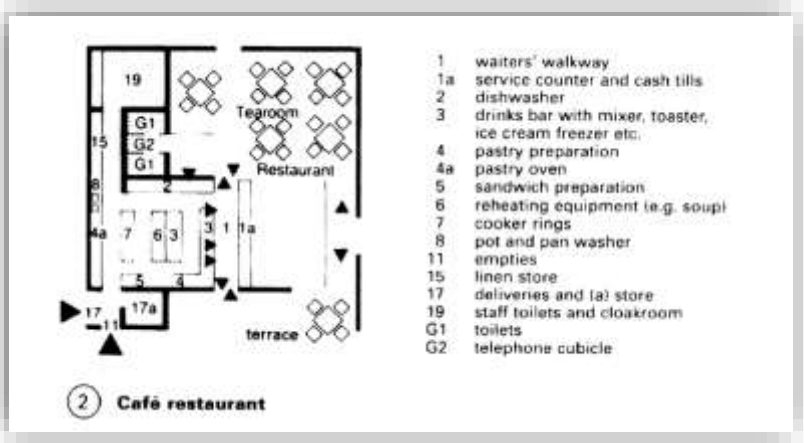


(Figure 4.31) General Auditorium Details

Cafeteria

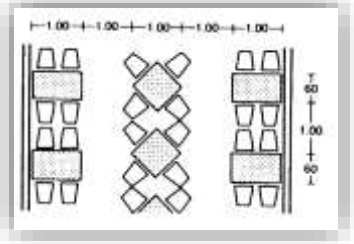


(Figure 4.32) Tables Dimensions

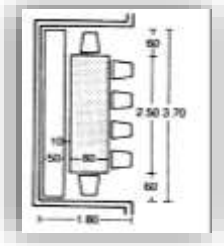


(Figure 4.33) General Example of Café Restaurant

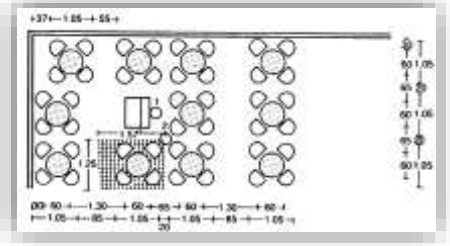
Furniture Arrangements



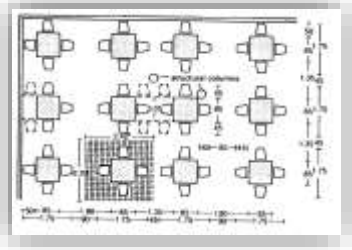
(Figure 4.34)
Minimal Seating Layout



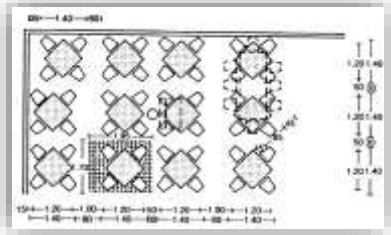
(Figure 4.35)
Alcoves Arrangement



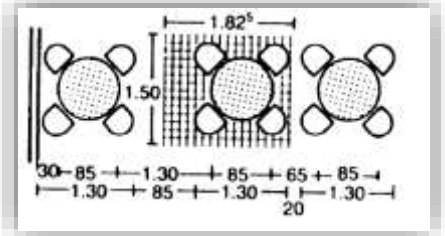
(Figure 4.36)
Minimal Table Spacing



(Figure 4.37)
Parallel Table Arrangement



(Figure 4.38) Diagonal Table Arrangement



(Figure 4.39) Café Table Arrangement

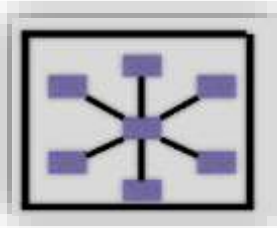
Museum Circulation

Circulation in Museums is an important Point and affects the Whole Project. This can be through:

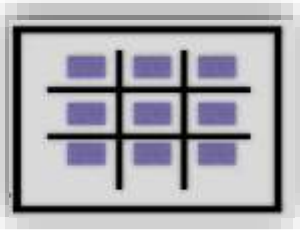
- Clarity of Circulation that allows people to find their ways easily and see Exhibits in a short time.
- Placing Similar Activities together that have common Movement.
- Any Space in Museum has its special Properties and their Circulations differ from each other.
- Preventing Intersections in Movements.

Circulation Types

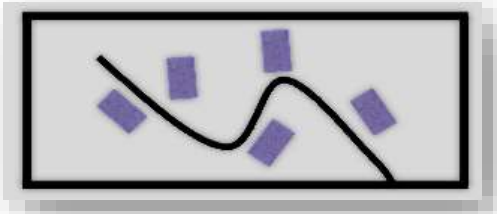
(Figure 4.40)
Linear Pattern Circulation



(Figure 4.41)
Central Pattern Circulation

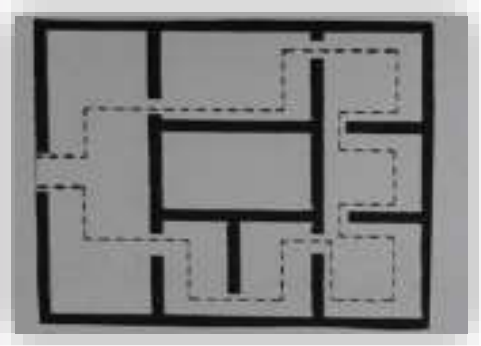


(Figure 4.42)
Grid Pattern

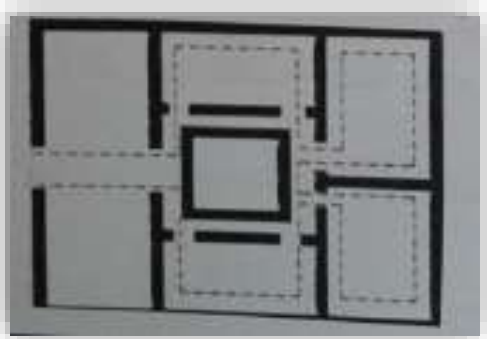


(Figure 4.43)
Organic Pattern

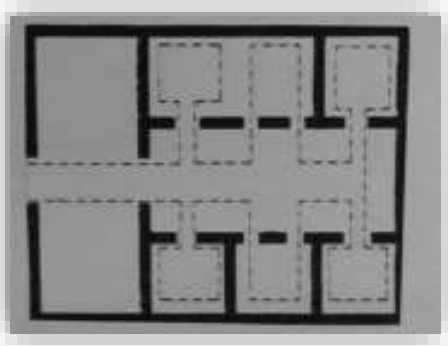
Examples of Exhibition Movements



(Figure 4.44)
Progression Method

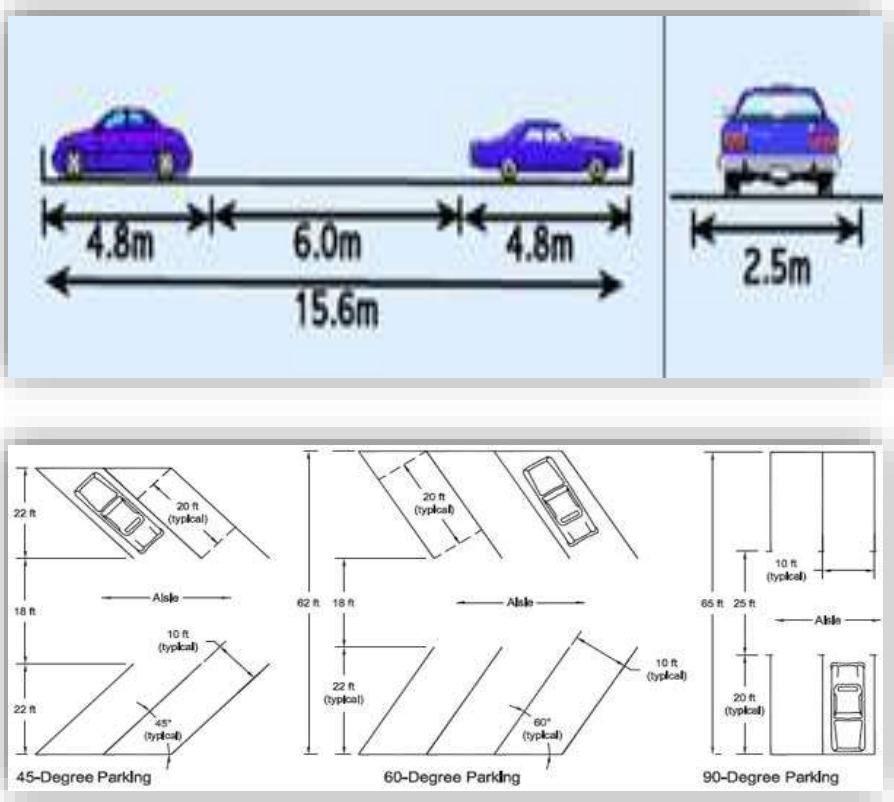


(Figure 4.45)
Movement Path Method



(Figure 4.46)
Central Courtyard

Car Parking



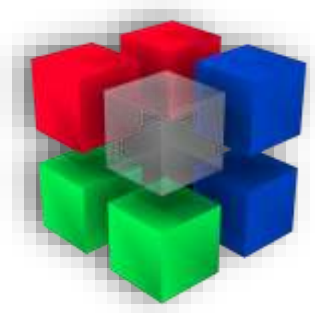
(Figure 4.47) Car Parking Standards

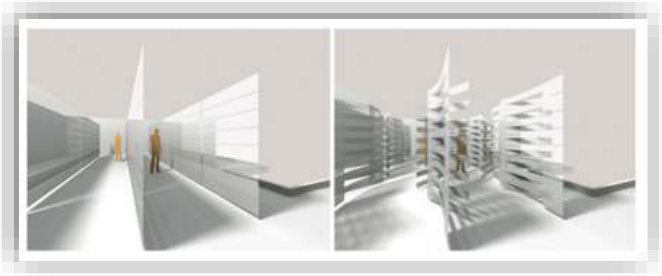
NEXT…

PROJECT
SPACE PROGRAM

5.1 Introduction

This Chapter determines the Projects functions with their Area and Number of Users based on Studied Similar Examples, Standards and Ministry of Culture.
All these together defines the Spaces Program and Zoning for the Contemporary Art Museum.





5.2 Population of Erbil City and Number of Visitors

The Population of Erbil City without Considering Ages between (0-4) Years for 2019 is 1919218 People (Ministry of Culture).
By using Equation For Future Target Year , We can determine the Population of Erbil City.

$$Pt = Pn\,(1+r)^{n}$$

Pt = Target Year Population
Pn = Population of Now
r = Growth Rate
n = Target Year Number

41

Pt = 1919218 (1+ 0.023)
Pt = **4875569** People

Target Year = **2060**
Growth Rate for 2019 = **0.023**

Number of People who visit the Project

According to Ministry of Culture, Number of People that visit Cultural Projects generally of Erbil Population is **25%**

4875569 * 0.25 = 1218892 People
1218892 / 365 = 3339 People / Day
Average of People from Population of Erbil City Visiting the Cultural Projects is 15%
3339 * 0.15 = 501 People Per One Day

According to Ministry of Tourism , Number of Tourists in 2060 will be 2822811 , and 75% of this Number will visit the Cultural Projects.

2822811 * 0.75 = 2117108 People
2117108 / 365 = 5800 People
5800 * 0.12 = 696 People Per One Day

According to Ministry of Culture Number of Visitors from other Cities is 50% of Erbil City Visitors

501 * 0.5 = 251 People Per One Day

TOTAL NUMBER OF VISITORS = 501 + 696 + 251
= 1448 Visitor / Day

Parking Calculation for the Project

Assuming each Car carries 4 Persons
So ratio of one Person = 0.25
1 Person = 0.25
1448 Person = ?

Number of Cars = 1448 * 0.25 = 362 Cars

Note: We Need also Bus Parking for the Project, We assume 8 of the Number to be Busses.

Number of Car Parking = 354
Area needed for Car Parking = 354 * 25 = **8850 sqm**

Number of Bus Parking = 8
Area Needed for Bus Parking = 8 * 72 = **576** sqm

TOTAL AREA NEEDED FOR PARKING = 8850 + 576 = 9426 sqm

5.3 Space Program Calculations

Calculation of Spaces in the Project depends on these Methods:

- Similar Projects
- Architectural Standards
- Ministry of Culture

Main Entrance

(Table 5.1) Main Entrance

No	Space Name	No. of Users	Capacity Person / sqm	No. of Space	Area (Sqm)	Total Area (Sqm)	Reference
1	Lobby	-	1.1	1	160	160	Similar Example
2	Information (Reception)	-	1.1	1	160	160	Similar Example
3	Waiting Area	-	-	1	140	140	Similar Example
4	Service	-	-	1	30	30	standard
5	WC	-	1	1	30 (Min)	30	standard
	Total					520	
	+ % 35 (Structure & Circulation)					**702**	

Administration

(Table 5.2) Administration

No	Space Name	No. of Users	Capacity Person / sqm	No. of Space	Area (Sqm)	Total Area (Sqm)	Reference
1	Manager Room	1	-	1	40	40	Similar Example
2	Assistant Room	1	-	1	35	35	Similar Example
3	Meeting Room	(Min 10)	-	1	45	45	Similar Example
4	Achieve	1	-	1	20	20	Similar Example
5	Office	2	-	1	40	40	Similar Example
6	WC	-	1	1	12	12	Standard
	Total					**192 ≅ 200**	
	+ % 35 (Structure & Circulation)					**270**	

Exhibitions

(Table 5.3) Exhibitions

No	Space Name	No. of Users	Capacity Person / sqm	No. of Space	Area (Sqm)	Total Area (Sqm)	Reference
1	Permanent Exhibition Hall	-	-	2	-	1526.25 ≅ 1530	Similar Example
2	Temporary Exhibition Hall	-	-	1	-	435.33 ≅ 440	Similar Example
3	Gallery	-	-	2	-	1279.66 ≅ 1300	Similar Example
4	Multi Purpose Hall	-	-	1	280	280	Similar Example
5	Store	-	-	According to Design	-	345	Similar Example
6	WC	-	1	20 (240of Similar Project / 12 Standard)	-	240	Similar Example
	Total					4135 ≅ **4140**	
	+ % 35 (Structure & Circulation)					**5589** ≅ **5600**	

Note: If Number of Exhibitions are put according to the Similar Projects, it will be as follows:

- Gallery = 9(Taubman) + 5(Louvre Abudhabi) + 8(Eli & Edythe) = 22/3 = 7.3 ≅7 Galleries
- Temporary Exhibition = 1(MAXXI) + 2(Taubman) + 1(Louvre Abudhabi) = 1.33 ≅ 1 Temporary Exhibition
- Permanent Exhibition = 6(MAXXI) + 1(Denver) + 1(Taubman) + 1(Eli & Edythe) = 9/4 = 2.25 ≅ 2 Permanent Exhibitions

Cultural (Library)

(Table 5.4) Library

No	Space Name	No. of Users	Capacity Person / sqm	No. of Space	Area (Sqm)	Total Area (Sqm)	Reference
1	Reading Hall	184	2.5	1	460	460	Standard
2	Bookstore	-	-	1	130	130	Standard
3	Administration Office	1	-	1	20	20	Similar Example
4	Slide Room	-	-	1	20	20	Similar Example
5	Archive	1	-	1	24	24	Similar Example
6	Printing and Copy	-	-	1	24	24	Similar Example
7	WC	-	1	2	12	24	Standard
	Total					702	
	+ % 35 (Structure & Circulation)					**947.7 ≅ 950**	

Note: There are some Spaces not available in most of Examples so not put for the Space Program for Example

- Book Numbering Room
- Cultural Book Exhibition

Cultural (Auditorium)

(Table 5.5) Auditorium

No	Space Name	No. of Users	Capacity Person / sqm	No. of Space	Area (Sqm)	Total Area (Sqm)	Reference
1	Auditorium Hall (Sitting)	According to Design	0.5	1	410	410	Similar Example
2	Stage	-	-	1	100	100	Similar Example
3	Manager Office	1	-	1	20	20	Standard
4	Dressing Room	-	-	2	20	40	Similar Example
5	Makeup Room	-	-	1	40	40	Standard Room
6	Service Room	-	-	1	20	20	Similar Example
7	Bath and WC	-	1	2	12	24	Standard
8	WC for Visitors	-	1	2	12	24	Standard
	Total					678 ≅ **680**	
	+ % 35 (Structure & Circulation)					918 ≅ **920**	

Cultural (Seminar Hall)

(Table 5.6) Seminar Hall

No	Space Name	No. of Users	Capacity Person / sqm	No. of Space	Area (Sqm)	Total Area (Sqm)	Reference
1	Lobby	-	1.1	1	140	140	Similar Example
2	Seminar Hall	-	1	1	360	360	Similar Example
3	Projector Room	-	-	1	25	25	Similar Example
4	Service Room	-	-	1	20	20	Similar Example
5	Storage	-	-	1	20	20	Similar Example
6	WC	-	-	2	12	24	Standard
	Total					589 ≅ **590**	
	+ % 35 (Structure & Circulation)					**796.5** ≅ **800**	

Cultural (Studio for Artists)

(Table 5.7) Studio for Artists

No	Space Name	No. of Users	Capacity Person / sqm	No. of Space	Area (Sqm)	Total Area (Sqm)	Reference
1	Working Studio	-	-	1	85	85	Similar Example
2	Meeting Room	-	-	1	30	30	Similar Example
3	WC	-	1	1	12	12	Standard
	Total					127	
	+ % 35 (Structure & Circulation)					**171.45 ≅ 175**	

Social

(Table 5.8) Social

No	Space Name	No. of Users	Capacity Person / sqm	No. of Space	Area (Sqm)	Total Area (Sqm)	Reference
1	Sitting Area	-	1.5	1	185	185	Similar Example
2	Kitchen	-	-	1	80	80	Similar Example
3	Storage	-	-	1	35	35	Similar Example
4	WC	-	-	2	12	24	Standard
5	Waste	-	-	1	12	12	Similar Example
6	Shops	-	-	According to Design	-	212	Similar Example
	Total					548 ≅ **550**	
	+ % 35 (Structure & Circulation)					**742.5** ≅ **745**	

Services

(Table 5.9) Services

No	Space Name	No. of Users	Capacity Person / sqm	No. of Space	Area (Sqm)	Total Area (Sqm)	Reference
1	Engineering Room	-	-	1	36	36	Similar Example
2	Electric Room	-	-	1	55	55	Similar Example
3	Air Conditioning Room	-	-	1	40	40	Similar Example
4	Storage	-	-	1	55	55	Similar Example
5	WC	-	1	1	12	12	Standard
6	Maintenance Room	-	-	1	130	130	Similar Example
	Total					328 ≅ **330**	
	+ % 35 (Structure & Circulation)					**445.5** ≅ **450**	

Total Area

(Table 5.10) Total Area

Space Name	Area (Sqm)
Main Entrance	702
Administration	270
Exhibitions	5600
Library	950
Auditorium	920
Seminar Hall	800
Studio for Artists	175
Social Services	745
Services	450

TOTAL AREA OF PROJECT SPACES

=

10,612 sqm

References

Books

- Ernst and Peter Neufert – 2012 (4th Edition) – Neufert Architects Data
- Neufert Joseph De Chiara and John Callender – 1983 (2nd Edition) - Timesaver Standards for Building Types
- Carles Broto – 2013 – New Concepts in Museum Architecture

Visits

- Visiting Ministry of Culture – Kurdistan Regional Government
- Visiting Ministry of Tourism – Kurdistan Regional Government
- Visiting Erbil Museums
- Visiting Shanider Gallery – Erbil
- Visiting Site (Erbil - 60 m Street – Old Saylo)

Websites

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